OCTOBER 1958

FOOD PROCESSING

THE MAGAZINE OF APPLIED TECHNOLOGY FOR MEN WHO MANAGE

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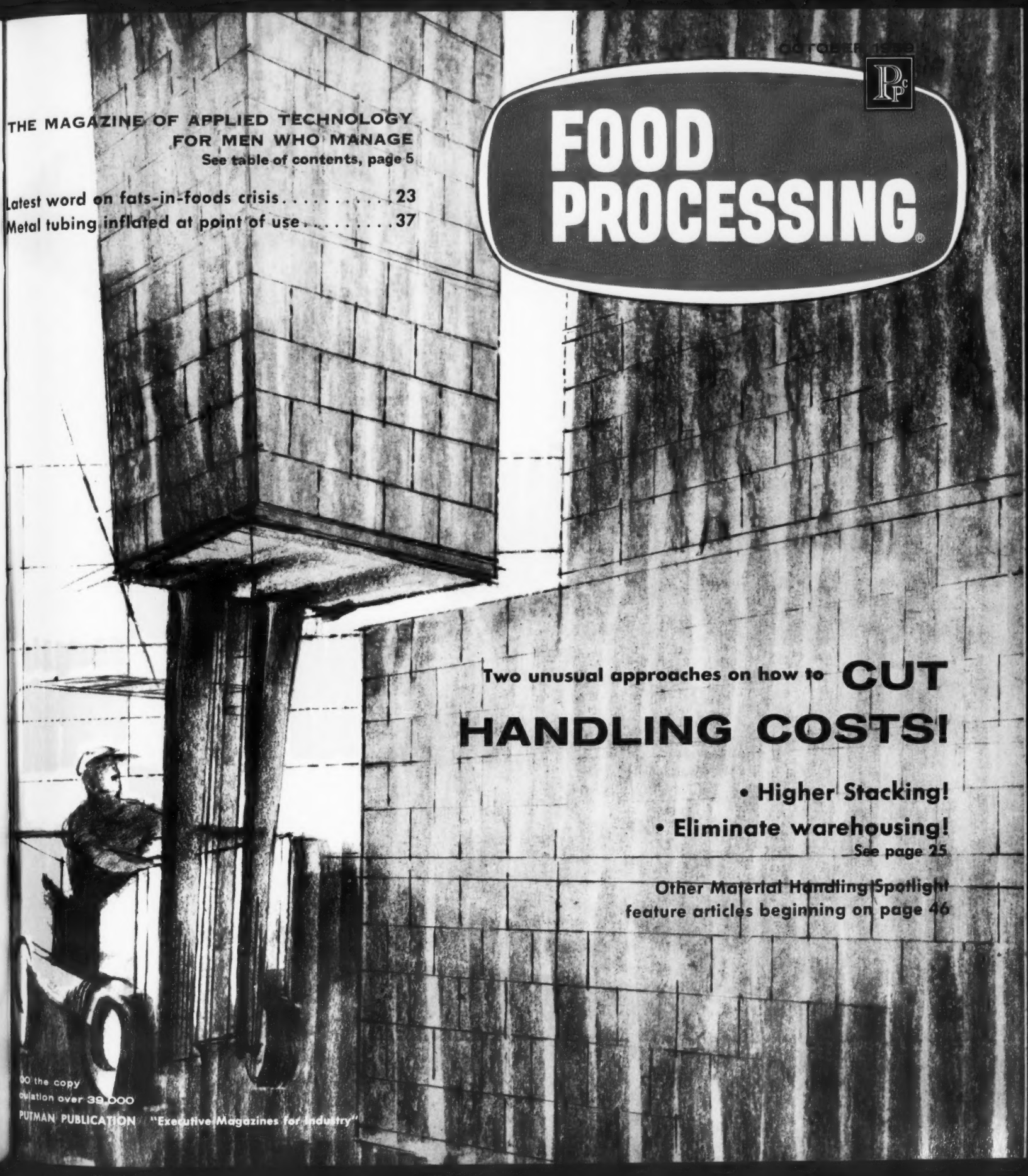

Two unusual approaches on how to **CUT HANDLING COSTS!**

- Higher Stacking!
- Eliminate warehousing!

See page 25

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90 the copy
culation over 39,000
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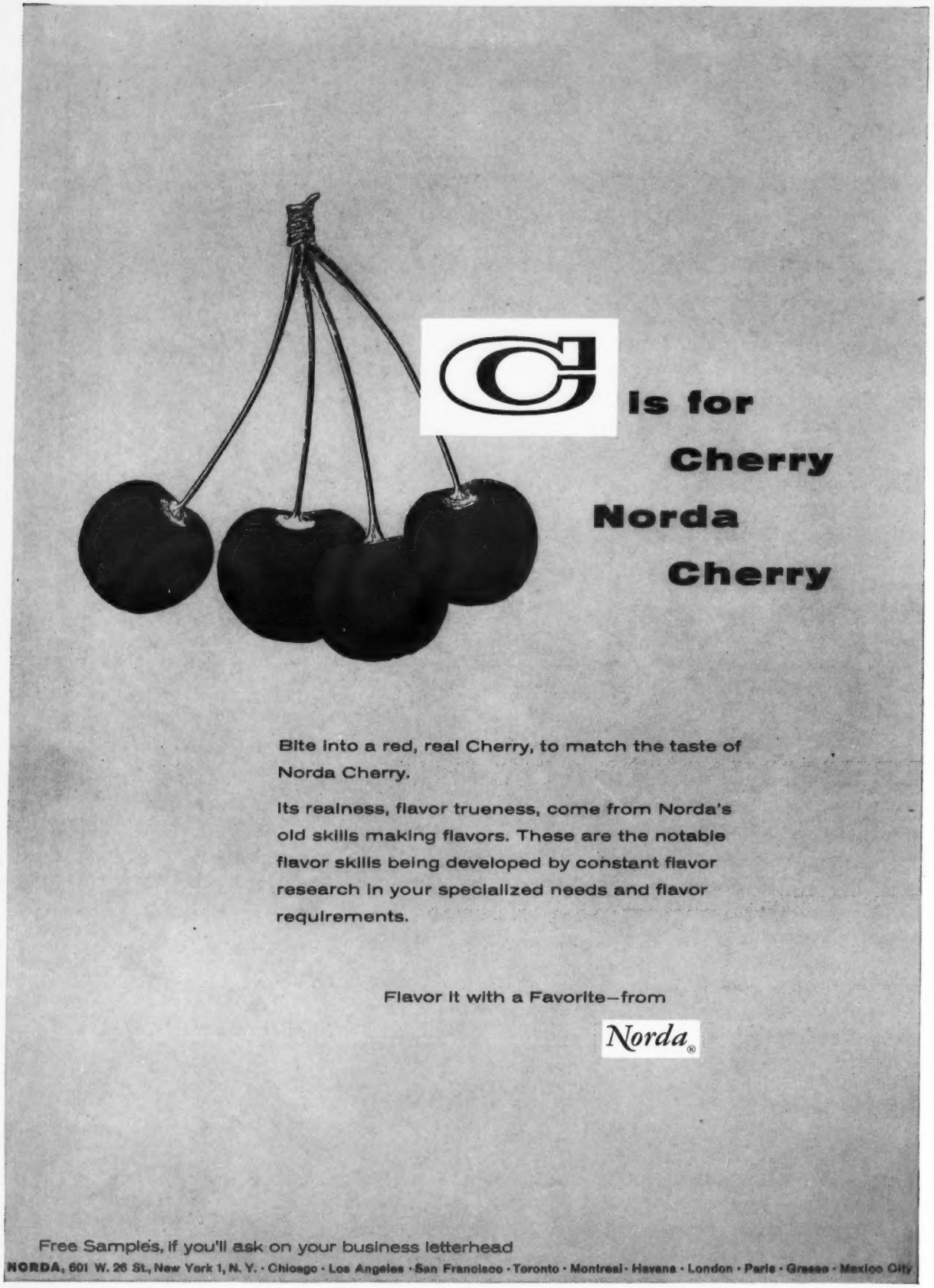
C Is for Cherry
Norda Cherry
Bite into a red, real Cherry, to match the taste of Norda Cherry.
Its realness, flavor trueness, come from Norda's old skills making flavors. These are the notable flavor skills being developed by constant flavor research in your specialized needs and flavor requirements.
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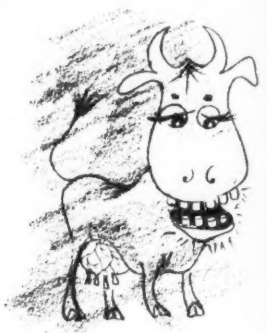
that's interesting

Betters Bossy's daily grind

Stainless steel crowns which fit over a cow's front teeth, and are fastened with dental cement, may enable beef cattle to eat better, live longer and bear additional calves.



Innovation is result of a Colorado rancher's noting that long-lived dairy cattle don't munch on many harsh abrasives, since much of their food is mixed and prepared feed. The range cow, however, grazes gritty pastures, wears her teeth down to the nub and cannot feed herself.

Take two . . . they're small!

Studies made on pilferage in retail stores, including food supermarkets, show that shortages generally listed as "customer pilferage" stem from numerous sources — including employee dishonesty, short shipment and poor accounting practices. Shoppers reportedly account for only $1 out of every $16 worth of stock shortages.

Blimey . . . this Limey milk!

A new way of flavoring milk with "actuated fruit flavor compounds" that introduces a true fruit taste into milk has been demonstrated by Essonia Ltd., Bradford, England. The compounds are skillful blends of vegetable extracts.

Guards against hairy berries

Carbon dioxide gas, swirling through sealed freight cars and trucks laden with fresh California strawberries consigned to Eastern markets, is saving tens of thousands of dollars for California berry growers each year.

The non-toxic gas issues from large chunks of dry ice, excluding a portion of the free oxygen in the car and thus inhibiting the growth of the furry acid molds that flourish in an outdoor atmosphere.

About $35 worth of dry ice is added to a boxcar carrying berries worth $4500 to $5000 cross-country.

It's only money!

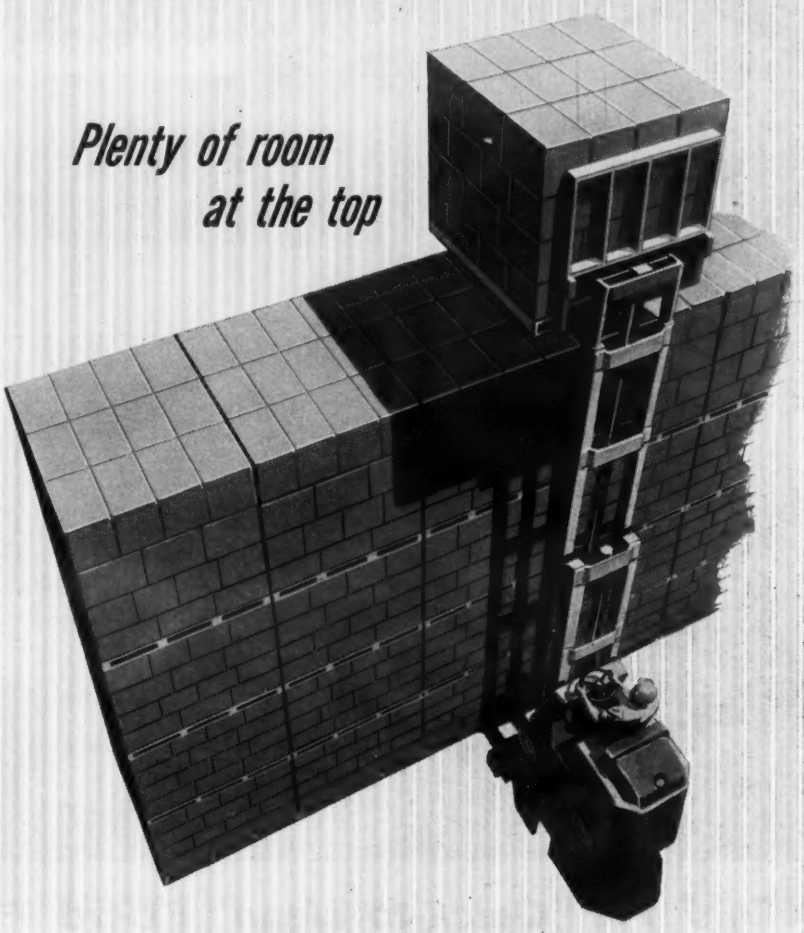
Twenty-one food companies were among the 100 leading national advertisers in 1958, according to figures recently released by ADVERTISING AGE magazine. Largest ad expenditure by a food firm was $96 million spent by General Foods, which ranked fourth in the nation. The amount was $9 million higher than GF's 1957 total and represented 9.1 per cent of sales.

American Home Products Corporation, second largest food advertiser, spent $60 million ($15 million above 1957), representing 16 per cent of sales. National Dairy Products was third with $38,500,000, or 2.7 per cent of sales, about even with 1957. Fourth-place General Mills spent $33,206,000 (up from $25,548,000 in 1957).

Combined expenditure of the 21 food companies totaled $498,995,837 — a rise of 9.1 per cent from the $457,550,175 spent by firms in 1957.

Say when, sailor!

The average submarine cruise during the War was 42 days. One lasted 88 days, during the last five of which the crew ate only catsup.



Filling your warehouse space to the limit? Hinde & Dauch corrugated boxes stack high and straight. Need better top-to-bottom protection for your product? Better see H & D.

Hinde & Dauch

Division, West Virginia Pulp and Paper

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15 FACTORIES • 42 SALES OFFICES

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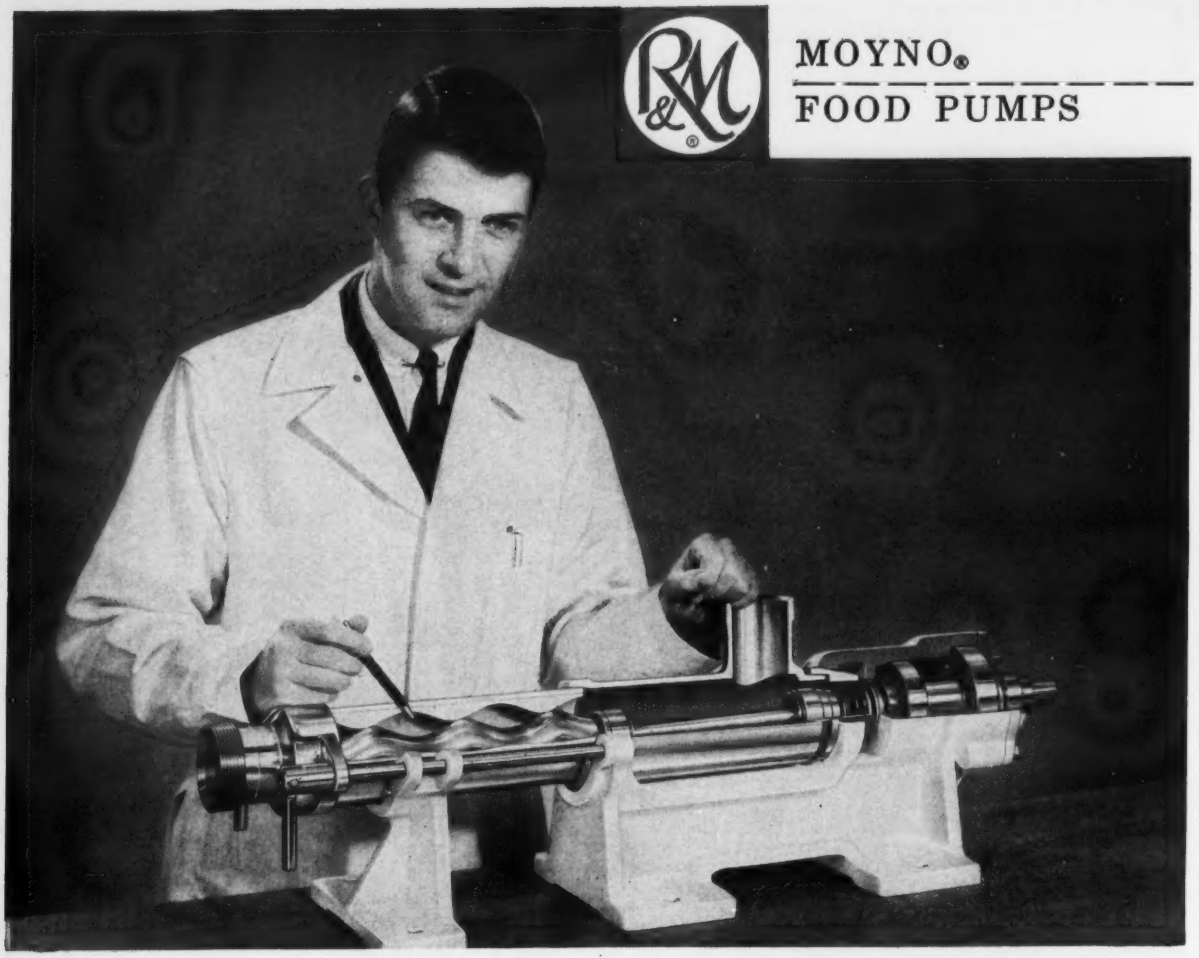

MOYNO®
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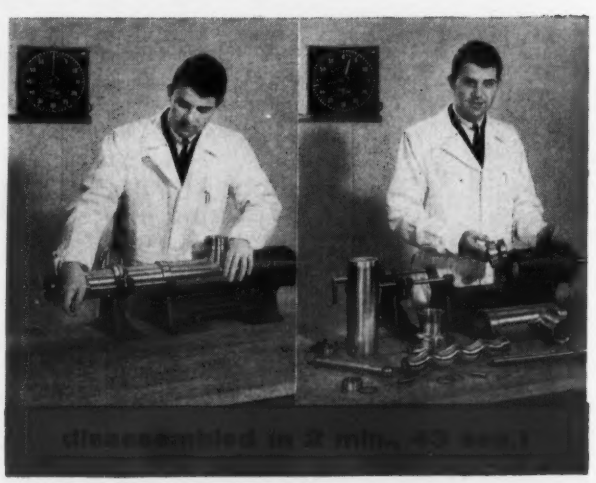
MOYNO®... *the "Quick-to-clean"* Food Pump that even *Pumps Suspended Solids!*

A MOYNO Food Pump can easily be disassembled in 2 minutes and 43 seconds for thorough, effective cleaning and be back on duty in minutes. MOYNOS eliminate long, costly cleanups that rob production time. Foods stay pure too, because MOYNO's smooth internal contours won't collect particles where bacteria might thrive, and bearing lubricant is completely isolated from pumping compartment to prevent contamination.

Any food product that will move through a pipe—from cider to lumpy potato salad—can be pumped with a MOYNO. The *"progressing cavity"* principle that distinguishes MOYNO from all other pumps explains this remarkable capability. The cutaway model above shows the screw-like, reversible rotor that revolves in a double-threaded stator to create these progressing cavities. Material flows smoothly and uniformly, without pulsation, aeration, agitation or disintegration. All wettable parts are stainless steel—or stator may also be synthetic rubber, odorless bakelite or other material, depending on service requirements. If needed, off-the-shelf replacement parts are always immediately available.

To chop cleaning costs and keep *all* foods moving through your plant, learn more about MOYNO by writing today for Bulletin 34 FP



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plants companies personalities

Anti-Recessional*

"A major reason why the 1958 Recession was short-lived is because the large, heavy mechanical and electrical industries had already effected substantial curtailment of inventory build-up by synchronizing purchasing and delivery of supplies with current production requirements, and no longer were millions of dollars of components being stored against future needs, as was the case in 1929!"

This is the personal opinion of Prof. Gerald A. Fitzgerald of the University of Massachusetts. His provocative article — "Eliminate Warehousing for Key Volume Items?" — beginning on page 25 of this issue, explains how this same system of synchronized purchasing and direct delivery could be applied to the food industry's advantage.

But just in case you're not quite ready to eliminate warehousing — even for those key volume items — national material handling expert Irving M. Footlik tells how to "Make the Most of Your Warehouse Space," beginning on page 25.

Associate Editor

* With apologies to Kipling

THE MAGAZINE OF APPLIED TECHNOLOGY
FOR MEN WHO MANAGE

FOOD PROCESSING

OCTOBER 1959
VOL. 20 NO. 10

CIRCULATION OVER 39,000

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Make the most of your warehouse space with higher stacking — Irving M. Footlik, President, Irving M. Footlik & Associates

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Fabricated in stainless alloys of varying thicknesses for processing or packaging applications

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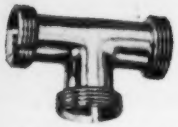
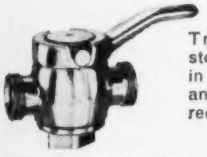
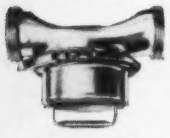


Tri-Clover stainless steel "standard" sanitary threaded fittings with bevel seat construction.

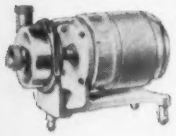
Tri-Clover Tri-Clamp fittings offer quick easy assembly and disassembly; long trouble-free fitting life.



Tri-Clover stainless steel valves are made in a full range of types and sizes to meet every requirement.



Tri-Clover full-flow magnetic traps employ an Alnico magnet to assure maximum removal of tramp metal.



Tri-Clover centrifugal pumps are fabricated of highest quality corrosion-resistant metals for efficient long-term service.

Series of Tri-Clover Valves serve HUNT FOODS Plant for almost 20 years

The "battery" of Tri-Clover stainless steel valves shown above are being used in the Hunt Foods, Inc. plant at Fullerton, California, in an atmospheric evaporator process for producing the well-known Hunt's tomato sauce. An "ordinary" installation, perhaps, except that *these same Tri-Clover valves have been giving reliable, trouble-free service in this plant for almost twenty years!*

Here is an outstanding example of the high quality material and workmanship that's "built-in" to the complete line of Tri-Clover stainless steel fittings, valves, pumps and tubing.

Why not let Tri-Clover quality products help to achieve new standards of efficiency and sanitation in *your* processing operations? Let our engineering staff help in solving your specific corrosion-resistant liquid or semi-solid conveying line problems.

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FOR MEN WHO MANAGE

Published in Chicago

Food Capital of the World

October 1959 Vol. 20 No. 10

Published monthly by

PUTMAN PUBLISHING COMPANY

111 E. Delaware Place

Chicago 11, Ill.

Telephone: WHitehall 4-6141

Creators of Putman-Style Magazines

FOOD PROCESSING • FOOD BUSINESS
CHEMICAL PROCESSING
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Printed in the United States

FOOD PROCESSING

(Food Processing Preview)

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Associate Editor, Palo Alto, Calif.
Karl Robe

Associate Editor
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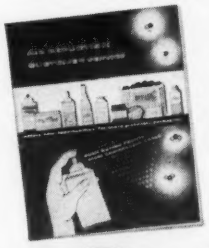
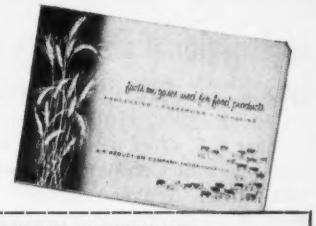


"New Opportunities for More Profitable Packaging" takes the reader on an interesting picture trip through Air Reduction's Customer Service Packaging Laboratory. It also explains how our representatives — both in the field and in the "lab"—will aid you in solving packaging and processing problems involving the use of compressed gases.

"Facts On Gases Used for Food Products" covers many profitable applications of compressed gases in the processing, preserving and packaging of food products...improved appearance and shelf life plus higher consumer acceptance.



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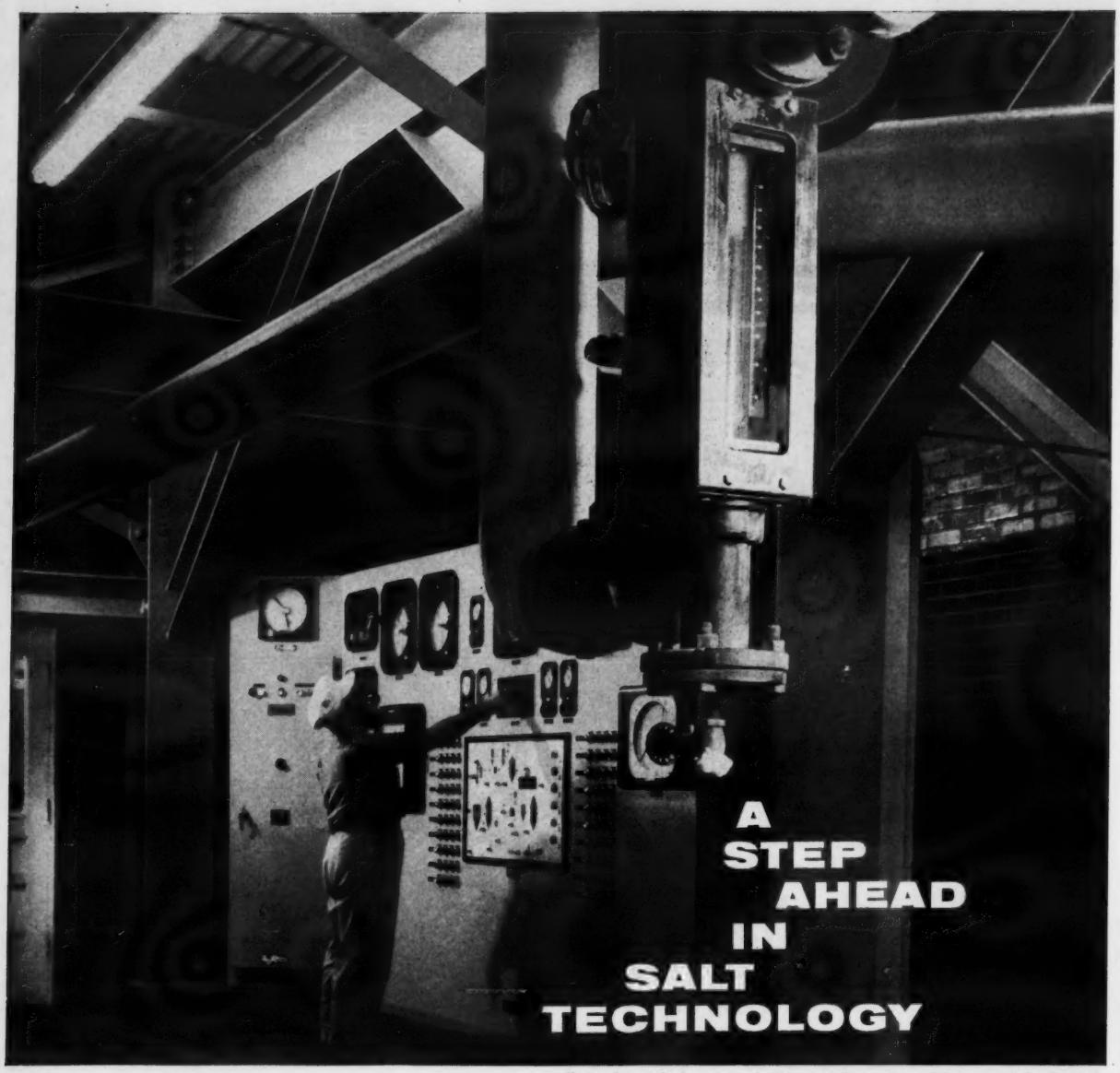

Control panel of automatic Recrystallizer plant. Photograph by Loebel.

International discovers new purification process...brings automation to salt refining

Last fall, after more than a decade of research, International Salt Company perfected the first new method of salt refining in over 150 years. This process has as its basis one of the most unusual facts in industrial chemistry: The major impurity in salt crystallizes out of solution as the temperature rises . . . while salt itself crystallizes out as the temperature drops.

In International's new process, a slurry of salt and brine is heated to 225°F. The salt goes into solution, and impurities (which remain undissolved) are separated out. Then the brine is flash-cooled to 140°F. Now pure salt crystallizes and is filtered out while any remaining impurities go into solution.

This process makes possible, for the first time, continuous, automatic refining of salt. With one man in control, International's new Recrystallizer at Avery Island, La., produces high-purity salt in one-third the time of conventional purification.

The scientific skill and research facilities that provided this "step ahead" are also at the service of any salt-using company. Contact International Salt Company, Inc., Scranton 2, Pa., or any of the offices listed below.

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Pull-pack package . . .

. . . dispenses food supplement tablets, four-at-a-time, in special unit-of-use "tapes." As each tape is pulled through slot at end and torn along perforation, next unit of tape and tablets is positioned in window cut into side panel. Designed and manufactured for Belco Products Corporation, Los Angeles, Calif., by Boxboard and Folding Carton Division of Continental Can Company, 530 Fifth Ave., New York 36, N.Y.

Spear carrier . . .

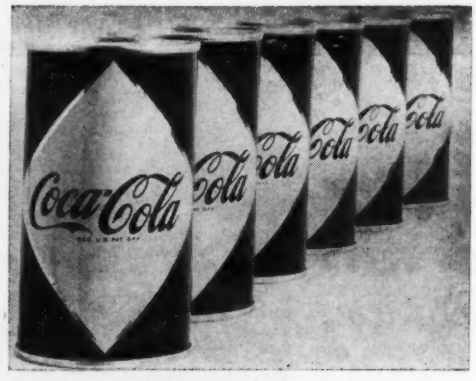
. . . protects asparagus tips from damage in transit or market, and provides brand identity. Jen Bee Asparagus Merchandiser comes flat, in sizes for one-lb, two-lb or precut asparagus, and may be set up and filled by hand or machine. By pouring a little water into the waxed container, product freshness can be prolonged. Boxboard and Folding Carton Division, Continental Can Company, 530 Fifth Ave., New York 36, New York.

PRODUCTS AND PACKAGES

This Month's Best . . .

New Star for Armour . . .

. . . "Flavor Saver Pak" saves Armour Star bacon from light damage while in supermarket freezer, from loss of freshness in home storage. When closed, package resembles a single-fold "booklet," with color illustrations, copy and price spots on the outside of the "covers." When Pak is opened, four individually sealed portions of sliced bacon are revealed. Perforations permit one or more of the four sections (containing about eight slices each) to be torn off and used as needed without rewrapping the fully sealed remaining portions. Foil-kraft-foil-poly exterior laminate is supplied by Reynolds Metals Company, Richmond 18, Va. Clear laminate of polyethylene-Saran-cellophane on inside of package is supplied by The Dobeckmun Company, Division of The Dow Chemical Company, 3301 Monroe Ave., Cleveland 13, Ohio. Current market test is underway in Minneapolis-St. Paul area.



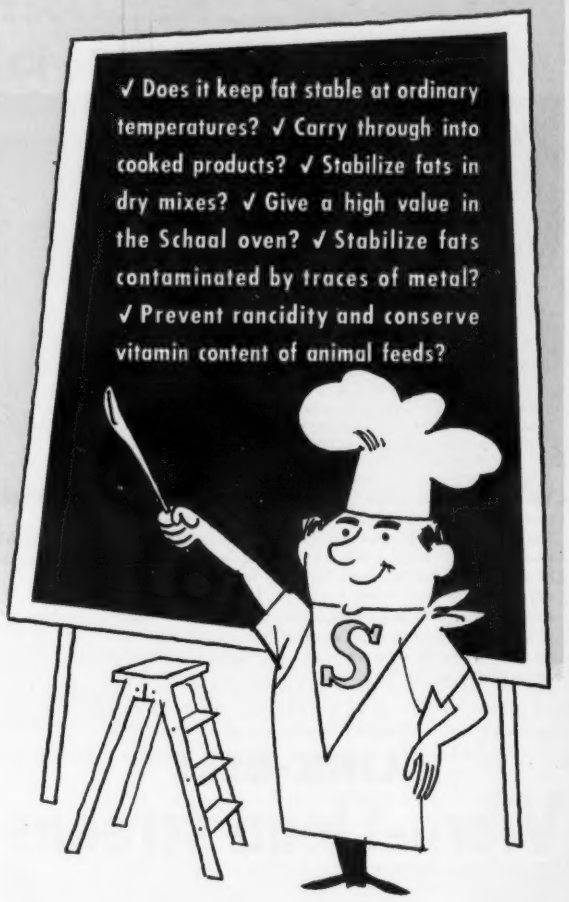
Canned 'Coke' . . .

. . . is in test-market stage at Brockton and Lynn, Mass., and in Providence, R.I. Twelve-oz can is an attractive red-and-white clean design container. Six-pack cartons are available in the test, being conducted by The Coca-Cola Company, 515 Madison Ave., New York, N.Y.

Flavored toppings spurt in favor . . .

. . . to such extent that new Chocolate Lucky Whip and Strawberry Lucky Whip shortly will expand from initial test-market stage. Packaged in nine-oz cans, and priced the same as regular Lucky Whip, the new flavored aerosol toppings are distinguished by appropriately colored dome caps. Products of Lever Brothers Company, 390 Park Ave., New York 22, N. Y.

Are you using the right antioxidant?


✓ Does it keep fat stable at ordinary temperatures? ✓ Carry through into cooked products? ✓ Stabilize fats in dry mixes? ✓ Give a high value in the Schaal oven? ✓ Stabilize fats contaminated by traces of metal? ✓ Prevent rancidity and conserve vitamin content of animal feeds?
S

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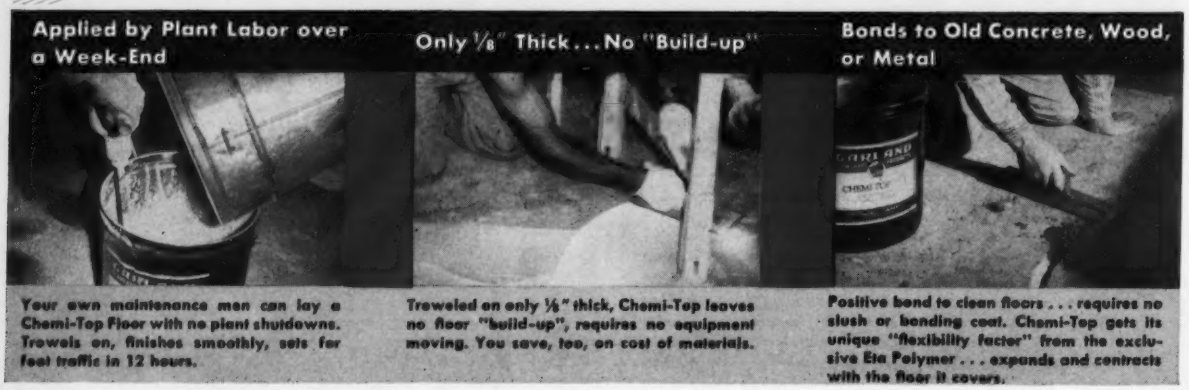

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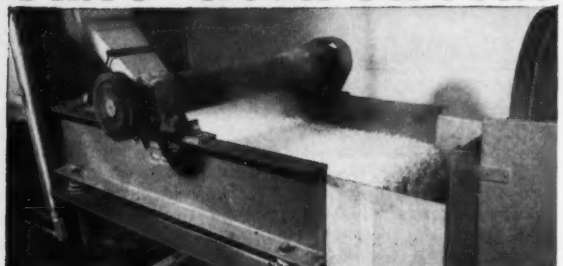
LINK-BELT Vibro-Clean screens



BLANCHED CORN is quickly, effectively dewatered by this Link-Belt Vibro-Clean screen at Oostburg, Wis. Canning Company. Corn is discharged directly to filling machines below.

- **Fast**
- **Thorough**
- **Sanitary**
- **Economical**

Link-Belt Vibro-Clean screens are the answer to fast, sanitary, low-cost cleaning and dewatering of food products. Absence of corners and crevices eliminates danger of bacteria build-up. High-speed vibration permits handling of extremely high capacities without blinding. Write for Book 2777. 14,625

LINK-BELT

VIBRO-CLEAN SCREENS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7.

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got a **SPRAY NOZZLE** *problem?*

perhaps one of our **DATA SHEETS** *can suggest a solution*

For almost every spraying application, there's a Spraying Systems Data Sheet that gives useful information on suggested installations and types of nozzles to use. If you have a problem, write and let us know the application involved . . . and we'll send the Data Sheet that applies.

SPRAYING SYSTEMS CO.
3213 RANDOLPH STREET • BELLWOOD, ILLINOIS

And . . . for complete spray nozzle information, write for Catalog 24.

5009 on Reader Service Slip.

plants companies personalities

William H. Pinchin, who directed Pillsbury's expansion into the Canadian consumer market, has been elected president of **Pillsbury Canada Limited.** His election is a paramount step in Pillsbury's firm policy to establish an all-Canadian management.

Dr. William B. Reynolds, formerly director of research for Phillips Petroleum Company, has been named vice president of **General Mills, Inc.,** and director of research.

W. R. Dorsey

S. I. Strashun

In line with further expansion of research activities, **Vacu-Dry Company,** Oakland, Calif., has promoted **William R. Dorsey** to vice president in charge of the newly established Research and Development Division. **Sumner I. Strashun,** formerly chief chemist, succeeds Dorsey as research director.

United Salt Corporation, Houston, Texas, announces election of **Lorne F. Van Stone** to the newly created position of executive vice president and general manager. Van Stone resigned as president and general manager of Uncle Johnny Mills, Houston, to make the move.

L. F. Van Stone

R. H. Davidson

General Foods Corporation has promoted **Robert H. Davidson** to director of the company's New Products Department. He had been advertising and merchandising manager of the Birds Eye division.

(*More on page* 13)

Typical Valley spinach farm reflects area's crop diversification — made possible largely through joint research by USDA, Texas A&M College System and American Can Company

Born in midst of Depression, buffeted by crippling cold, floods, blight and price drops . . .

Rio Grande Valley canners head to new peak pack

THE invincible spirit of Texans in succeeding against overwhelming odds is demonstrated by the canners of the Rio Grande Valley — a four-county delta area at the state's southern tip that, among other crops, produces over 20 per cent of the world's citrus fruit and more than 12 per cent of its carrots.

Despite drought, floods, hurricanes and freezes, the Valley canning industry has moved to larger and higher-quality packs — with nearly 500,000 tons of vegetable and citrus products canned during the past year.

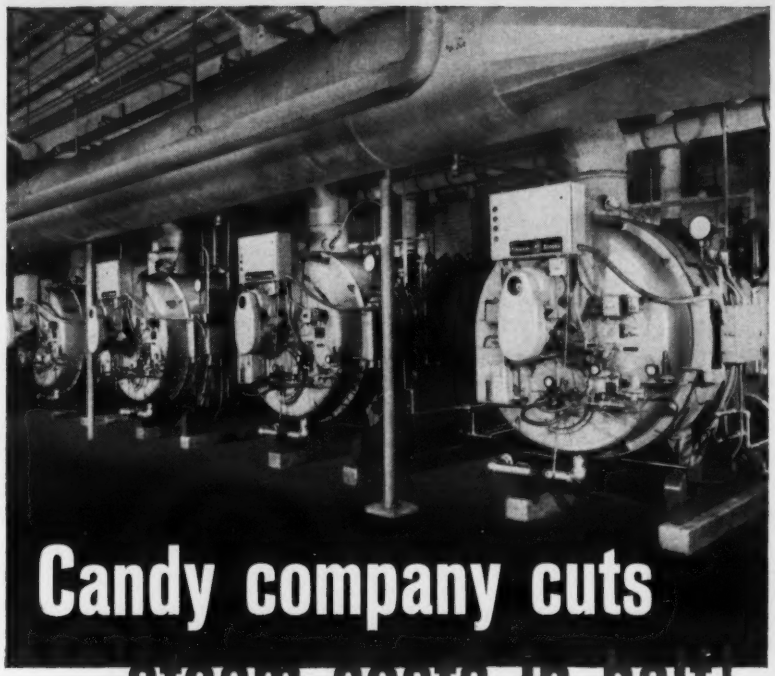
Outstanding examples of adversity were the 1949 and 1951 freezes which together wiped out more than two-thirds of the 11 million grapefruit and orange trees. The canning industry suffered in proportion.

Due to the freeze, an interesting change in canning operations took place, which also demonstrated the resourcefulness of the area's farmers.

Before 1949, citrus products

(*Continued on next page*)

Two of Valley's outstanding canning plants, located near Donna, Texas, are Taormina Company (foreground), which has tripled its facilities in past two decades, and Knapp-Sherrill Company (right)



Candy company cuts steam costs in half!

At Edgar P. Lewis & Sons, Inc., Malden, Mass., four Cleaver-Brooks packaged boilers assure a constant supply of steam at constant pressure — result is higher candy quality at lower cost

This leading New England confectioner formerly purchased its steam at a cost of $80,000 a year. Mr. Frank Reis, plant engineer, reports that since installation of four Cleaver-Brooks combination gas/oil boilers, operating costs have been reduced by half. What's more, Mr. Reis points out that having a truly dependable source of steam at constant pressure has improved the quality of his company's candies.

Steam is used for both heating and processing. Two of the CB boilers are high pressure—steam produced at 120 lbs. is piped to kettles where the candy is cooked. A pair of low pressure CB boilers operate 24 hours a day furnishing heat for the five plant buildings. Low pressure steam is also used in candy drying operations.

Day-in and day-out dependability is one feature that makes Cleaver-Brooks packaged boilers tops with food processors. Cleanliness, lower installation and operating costs, lasting high efficiency and free starting service are other big plus factors. For complete information on CB boilers (130 models, 15 to 600 hp, gas, oil or gas/oil fired) call your representative or write Cleaver-Brooks Company, Dept. L, 357 E. Keefe Ave., Milwaukee 12, Wis.

Cleaver Brooks.
ORIGINATOR AND LARGEST PRODUCER OF PACKAGED BOILERS

SWEET SAVINGS — Jelly strings, marshmallow eggs, chocolate peanuts are just a few of the quality candies made by Edgar P. Lewis & Sons, Inc. Battery of four Cleaver-Brooks boilers keeps steam costs down . . . keeps candy quality up.

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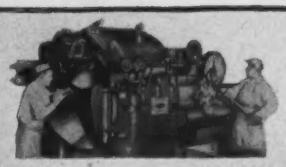


"THIS LUBRICANT INCREASED BEARING LIFE FROM 2 WEEKS TO 2 YEARS"

—says THE GLOBE COMPANY

"Animal acids and moisture, most harmful to ball and roller bearings prevails in the entire meat packing industry. With conventional lubricants, some of the bearings in our Roto-Cut machines did not last two weeks. Since using Ball Bearing LUBRIPLATE in machines operating continuously 24 hours a day for over two years, we have not had a single bearing replacement."

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

5011 on Reader Service Slip.

Rio Grande canners

(*Continued from preceding page*)

accounted for 75 per cent of the pack, but now three-quarters of all canned items are vegetables, with the balance citrus.

Much credit for such crop growth and improvement goes to the USDA, the Texas A&M College System's experimental substation in Weslaco and the agronomy and technical services of American Can Company.

One outstanding result of this cooperative supporting research was the development of a new spinach variety that would not be affected by blue mold.

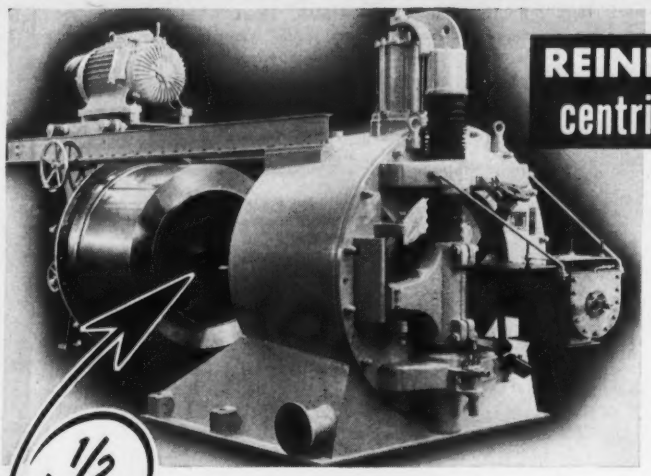
New planting of high-yield citrus trees already has restored four million of six million trees destroyed during freezes of 1949 and 1951

High-quality spinach crops now being grown in the Valley (photo p. 11) indicate that other vegetable varieties also can be grown there successfully.

As a consequence, Valley farmers no longer regard the canning industry as a sporadic outlet for their surplus fresh-market crops — instead, more and more are growing products specially for canners, on a contract basis.

The combination of foresighted research on and development of new crop types, plus the stubborn tenacity of the area's growers and canners in the face of natural adversity (last fall's heavy rains and floods wiped out half the green bean pack) is beginning to pay big dividends.

The 1959-60 vegetable pack is expected to exceed the previous high of six million cases, while citrus output should reach about 10 million boxes, of which somewhat over one million will be canned. — END



That's all the time needed to open, thoroughly clean and inspect, and close this automatic stainless steel Reineveld Horizontal Separator.

This means sanitary operation at all times and at least double the output of any other machine. Yield is higher, too, as solids remain undisturbed after separation until cut-out.

Consult our listing in CEC or write for bulletin 356.

Sold and Serviced by:

HEYL & PATTERSON, inc.

55 FORT PITT BLVD., PITTSBURGH 22, PA.

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FASTER SPEED

NOW SAVES ON VIKING Stainless Steel and other Alloy Pumps

Now Viking Heavy-Duty type pumps made of stainless steel, monel, mild steel and other alloys can be operated up to 100% rated speed on thin liquids.

By increasing the capacity and speed of a pump, upwards of $300 to $400 can be saved on some sizes.

Entirely new, modern foundry facilities and manufacturing processes enable the complete line of Viking alloy pumps to meet still more exacting requirements.

If your specifications call for alloy pumps, see how you, too, can save on our new line of full speed Vikings.

For information, send today for catalog MEP

VIKING PUMP COMPANY

Cedar Falls, Iowa, U.S.A. In Canada, it's "ROTO-KING" Pumps

See Our Catalog in Sweet's Plant Engineer's File

5013 on Reader Service Slip.

Plants, Companies, Personalities

Dell Food Specialties Co.

Beloit, Wis., has added a one-story building which will increase by 75 per cent previous production capacity for mixes and seasonings.

General Mills, Inc.

has acquired the business of Latham Foods, Ltd., Bromborough, Cheshire, England. Latham manufactures Cracka-Jack Corn Flakes and Cakeoma Cake Mixes, and has been one of the leaders in developing the British cake mix market. The acquisition marks the first General Mills venture into the grocery products business outside the North American continent. Latham will operate as a wholly owned subsidiary under direction of A. Z. Kouri, executive vice president for Consumer Food Activities. Thomas B. Humphrey, Minneapolis, has been named resident managing director.

General Foods Corporation

plans to complete by March 1960 a 198,000-sq-ft, one-story sales and distribution center to serve the Chicago market. Located on a 27-acre tract 15 mi north of downtown Chicago, the facility will be the largest in GF's nationwide network of 17 market-centered sales and distribution centers introduced in November 1957, and scheduled for completion in 1961.

Borden Foods Company

is completing a plant in Grafton, N.D., geared to turn out nearly seven million lb of instant whipped potato flakes per yr. Until now, a plant at Hartland, Me., has been Borden's only source of supply.

(*More on page* 55)

For more information on product at right, circle 5014 see information request blank opposite last page.

Let us buy you your first box of Kimwipes®

DISPOSABLE WIPERS

Fill in and mail this coupon *today* so that we can rush you your FREE box of 100 Kimwipes disposable wipers! We want you to try Kimwipes in your own plant and discover their superiority over cloth towels in food processing operations. That's why we're making this Free Offer! You'll get top performance with Kimwipes—plus top efficiency, ease of handling and economy.

Use them dry for quick, thorough absorption of shortening oils and grease. Use them wet for easy removal of sticky frosting, syrups, sugar and flour from workers' hands or machinery. Use both wet and dry for keeping equipment clean and sanitary. Available in handy pop-up packages or metal wall dispensers.

Super sanitary Kimwipes pay for themselves in savings on towel laundering, alone!

By the makers of KLEENEX® tissues...

KIMBERLY-CLARK CORPORATION
NEENAH, WISCONSIN

CLIP AND MAIL THIS COUPON, TODAY!

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Please send me my FREE package of Kimwipes disposable wipers, "900-L".

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STEPHENS-ADAMSON

BELT CONVEYOR system saves leading food processor up to $90,000 in year's operation!

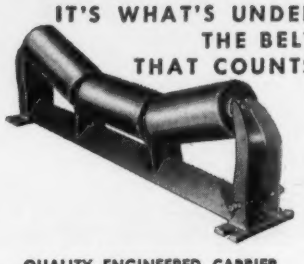
STEPHENS-ADAMSON engineers have a long-standing reputation for firsts — both for size and scope of engineered systems and for product features.

Typical of these firsts, is the World's Longest Grain Belt Conveyor, engineered for the A. E. Staley Mfg. Co., Decatur, Illinois, a half-mile belt conveyor system which has saved its owner nearly $90,000.00 in its first year of operation.

The conveyor system moves up to 224 tons of corn hourly — 192,000 bushels a day — from below the 12 million bushel capacity terminal elevator to the top of the processing plant holding elevator a half mile away.

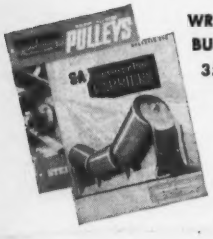
Beside speeding corn handling to an equivalent of 100 grain cars per day, the installation provides a transfer system with better control, assures cleanliness of the corn, and eliminates spillage. Reduced handling costs per ton has resulted in considerable savings in over-all operating expenses.

IT'S WHAT'S UNDER THE BELT THAT COUNTS



QUALITY ENGINEERED CARRIER
S-A manufactures a complete line of anti-friction carriers each providing a combination of exclusive engineering features.

S-A CURVE CROWN PULLEYS
Maximum belt training effect and minimum belt stress and wear are provided with patented S-A CURVE CROWN design.



WRITE FOR BULLETINS 355 and 558

S-A
MATERIALS HANDLING PRODUCTS
SEALMASTER BALL BEARING UNITS

ENGINEERING DIVISION
STEPHENS-ADAMSON MFG. CO.
GENERAL OFFICE & MAIN PLANT, 17 RIDGEWAY AVENUE, AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
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conventions and exhibits

Oct. 19-23. National Safety Council, 47th Annual National Safety Congress & Exposition, Conrad Hilton, Congress, Sheraton, Morrison, La Salle hotels, Chicago, Ill.

Oct. 25-28. National Frozen Food Distributors Assn., National Frozen Food Merchandising Exposition, Hotel Sherman, Chicago.

Nov. 2-5. Air Conditioning & Refrigeration Industry, 11th exposition, Convention Hall, Atlantic City, N.J.

Nov. 16-19. American Bottlers of Carbonated Beverages, International Soft Drink Industry Exposition, Kiel Auditorium, St. Louis, Mo.

Nov. 17-20. Packaging Machinery Manufacturers Institute Show of 1959, Coliseum, New York City.

Dec. 26-*Jan.* 3. Dairy and Food Exposition, Coliseum, New York, N.Y.

Jan. 18-23. National Canners Assn. and Canning Machinery Supplies Assn., annual conference and exposition, Hotel Americana, Miami Beach, Fla.

Jan. 25-27. National Dairy Council, 45th annual meeting, Hotel La Salle, Chicago, Illinois.

Jan. 25-28. Plant Maintenance & Engineering Show and concurrent (Jan. 25-27) conference, Convention Hall, Philadelphia, Pa.

Feb. 12-14. Institute of Poultry Industries, fact finding conference and exposition, Municipal Auditorium, Kansas City, Mo.

Mar. 6-9. National Assn. of Frozen Food Packers, 19th annual exposition and annual meeting, Conrad Hilton Hotel, Chicago, Ill.

For more information on product at right, circle 5016 . . . see information request blank opposite last page.

WARNER-JENKINSON MFG. CO. RED TRADE MARK SEAL ST. LOUIS

CERTIFIED FOOD *Colors*

Tempting, eye-appeal attains its most potent sales effectiveness with Red Seal Colors of unsurpassed brilliance, purity and uniformity. Let Warner-Jenkinson produce—and precisely re-produce—the exact colors to give your products the greatest possible taste-stimulating attractiveness.

WARNER-JENKINSON MANUFACTURING CO.

Manufacturers of Certified Food Colors, Vanillas, Extracts, Flavors

2526 Baldwin St. • St. Louis 6, Mo.

West Coast: 2515 Southwest Drive, Los Angeles 43, Calif. • Warehouses: Boston, Jersey City, Atlanta

letters from readers

Readers are invited to submit their comments to:
The Editor, FOOD PROCESSING
111 E. Delaware Pl., Chicago 11, Illinois

Unitized Shipping

FOOD PROCESSING for May featured the article — "You Can Help Remove Roadblocks to Shipping Cost Reduction" — first of a series on the potentialities of "unitized shipping" for the food industry, and the problems that must be surmounted.

Responses from a variety of handling experts were published as a feature article in July. The following letter, received after the issue's deadline, is an additional perceptive comment on the unitized shipping picture.

Value might be relative

Since packers, transportation and warehouses deal in large quantities, they are prepared to handle large units. Unit loading would greatly reduce their costs.

On the other hand, distributors, wholesalers and chain stores have the problem of selecting small quantities fast and accurately. Unit loading to them is not a solution to their greatest problem. They could receive in large unit loads, but these must then be broken down into smaller units.

Costs of pallets, whether fiberboard or wood, have been regarded as extra costs to packers, and has been one reason for packers being discouraged with respect to unit loading.

However, if 100 individual cartons were placed on a pallet to be handled as a unit load from packer to wholesaler, the cartons could be of less strength and cheaper. Savings in the container would overcome most of the pallet cost.

Demand for the different products varies, so that standard quantities on each unit load would be a problem. In the frozen food field, two pallet sizes—40 by 48 and 40 by 24—probably would overcome this problem.

There never could be one standard-size unit acceptable to everyone, but it is possible to standardize the frozen food items on two sizes of pallet.

JAMES J. GALLERY
Vice President
Quincy Market Cold Storage
and Warehouse Company

Next article in the series on unitized shipping—"Big Stakes in Unitized Shipping—What Method Has Edge?"—ran in August FOOD PROCESSING. Presenting the "pros and cons" of four accepted methods of achieving load unitization, the article inspired the following comments:

Clamp attachments — "pro"

Cincinnati, Ohio.—We have tried all four approaches to handling unit loads. Each has its advantages and disadvantages. Of the four used to date, we far prefer the clamp method.

In your description of each method—wood pallet, paper pallets, steel-strapped loads and clamp-truck handling, you discuss the features of each. In the clamp truck section, however, you touch fully on the disadvantages—even to the extent of a special caption —"Clamp disadvantages."

While we are sure it is not intended, we wonder whether some readers would feel that this special emphasis indicates that the clamp truck is less attractive than the other devices.

A. SPINANGER
Associate Director
Methods Development
Industrial Engineering Division
The Procter & Gamble Company

Clamp attachments — "con"

Alameda, Calif.—You mentioned that production is reduced "up to 20 per cent" in use of clamps rather than conventional fork lifts.

Our experience has been that clamp production is substantially lower, as compared to conventional palletized cargo, than your figures indicate. We would be inclined to say that the difference would be near 40 per cent.

Not only is the initial cost for clamp trucks higher, but the maintenance of the clamp accessory is substantial, certainly warranting use of the word "appreciable" as contained in your marginal comment.

D. B. MOTT
Vice President
Encinal Terminals and Warehouses

More clamps — "con"

Washington, D. C.—The only facet of your series of articles on handling unitized loads which we do not like is the subdued vein running through the August article ("Big Stakes in Unitized Shipping") that the days of the wooden pallet are numbered.

We honestly believe that nothing presently on the market in the way of handling devices will replace wooden pallets to any great extent. This is based on thorough and constant research, coupled with more than 50,000 miles of travel per year in contracting users of handling equipment.

The best proof of this observation is that in 1959 the food processing industry will purchase more wooden pallets than in any previous year. This will also be true of all other industries.

WILLIAM H. SARDO, JR.
Executive Vice President
National Wooden Pallet
Manufacturers Association

Shipper inquiries

San Francisco, Calif.—After reviewing your article, I feel the subject is well covered and something that will be of interest to your readers. We are receiving more and more inquiries from our customers on the subject of rail shipments utilizing the unit type method of loading.

L. F. DELVENTHAL, JR.
Senior Transportation Engineer
The Western Pacific
Railroad Company

Expendable pallet costs

San Francisco, Calif.—We read the article with great interest, and found it to be highly informative. However, we do wish to comment regarding the present cost of softwood expendable pallets on the West Coast. Our experience has revealed cost of these pallets to be $1.50 and up, which we believe is representative within the industry.

CHARLES G. DAKANDER
Traffic Department
California Packing Corporation

food regulations

Under way . . .

More FDA Inspections

Food processors can expect stepped-up FDA activity in the fiscal year now under way as a result of a budget increase of almost 3 million dollars. FDA will have $13,800,000 to work with, an increase of 26.4% over 1959.

Look for more visits from food and drug inspectors. Inspections of Food, Drug and Cosmetic plants will jump from 21,840 to 27,000. Frequency of inspections will increase from an average of about once every 4½ years to once every 4 years. Samples examined for adulteration and misbranding will be upped from 29,750 to 33,000.

Of the increased funds, $488,800 is earmarked for continued administration of the Food Additives Amendment. This means additional inspectors and chemists to examine samples to make sure only permitted additives are being used and are in compliance with safety regulations.

Research on "health problems" will get added attention. In this category, specific projects being considered are the following:

1. A study of the possible carcinogenicity of container waxes.
2. A substantial increase in surveillance of foods for radioactivity.
3. Development of methods for identifying and measuring pesticide residues in foods.
4. Additional activity in the establishment of food standards.

Determination of safe list a comprehensive task

What food substances do qualified experts generally recognize as safe? This question — the beginning point under the Food Additives Amendment — has turned out to be one of paramount interest to government and industry in year one of the new law.

The problem of how FDA is to decide which food chemicals are subject to the new safety procedures and which are not was discussed by William W. Goodrich, Assistant General Counsel for Food and Drugs, Department of Health, Education and Welfare. Mr. Goodrich and others from government and industry spoke on food additive questions before the Food, Drug, and Cosmetic Law Division of the American Bar Association meeting in Florida recently.

General recognition of safety means that the substance is recognized as safe by substantially all appropriately qualified experts, Mr. Goodrich told the group. It is not enough that the FDA experts regard a substance to be safe, he continued, or that this belief is shared by FDA people and the scientists who developed and presented the data. The facts upon which experts generally can reach their conclusions of safety should be available in the published scientific literature and other accessible material.

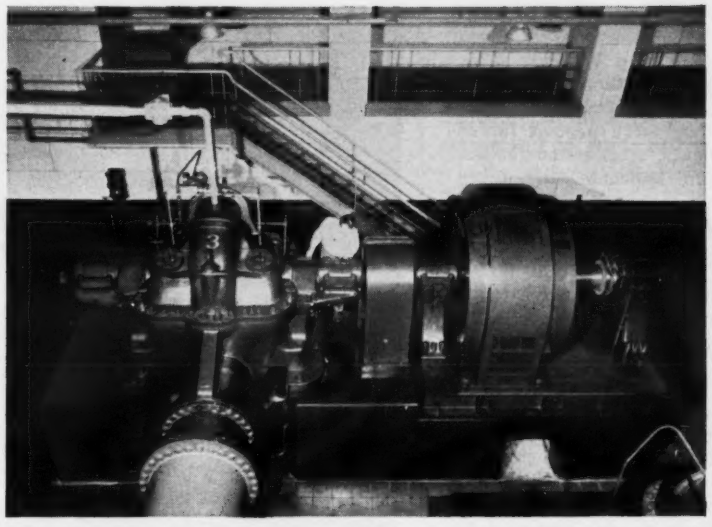
FDA's first step was a proposed list — admittedly incomplete — of additives classified by functional use which FDA scientists believed would be generally recognized by other appropriately qualified scientists as having been proved safe for their intended use. The criteria of judgment: scientific procedures or experience based on common use in food.

Comments on the list — circulated in December of last year to a large group of qualified scientists — are now in. "The problem is what to do about them," Mr. Goodrich said.

Some of the scientists would not express any opinion at all on the list as given. They want FDA to describe the chemicals

(*Continued on next page*)

A case for F-M Split-Case Centrifugals!



Typical installation in Toledo averages 80.314% wire-to-water efficiency for year!

Exceptionally high and dependable efficiency with steady, low-cost operation year after year—that's the report from a host of municipalities and industries using Fairbanks-Morse pumps in their pumping stations.

Why? Ask stations like Collins Park High Service in Toledo, O., where five Fairbanks-Morse 36-in. Split-Case Centrifugal Pumps have been giving superb performance for 17 years. The No. 3 pump in the photo pumped 6,065,590,000 gallons in one year alone, handling 26.13 percent of the plant total, and consuming just 3.55 kilowatts hours per million foot gallons!

Your Fairbanks-Morse Field Engineer welcomes you to inspect many other reports like this from his files—reports revealing why no other manufacturer can match the experience of Fairbanks-Morse in providing pumps and drivers for both municipality and industry. Your F-M Field Engineer will be glad to work with your own engineers in selecting the best equipment for your specific requirements. Write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

See Sweet's Product Design Catalog File for complete F-M Pump Line.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST

PUMPS • SCALES • ELECTRIC MOTORS • DIESEL, DUAL FUEL AND GAS ENGINES
LOCOMOTIVES • COMPRESSORS • GENERATORS • MAGNETOS • HOME WATER SYSTEMS

5017 on Reader Service Slip.

(*Continued from preceding page*)

with greater specifications and give the levels and other conditions of use before they'll answer on any of the substances.

Mr. Goodrich reported that several scientists replied that they were unfamiliar with any proof whatever of safety on a number of the items. Still others raised questions of safety about common nutrients such as ascorbic acid, carotene, and Vitamin D.

Some of those responding suggested that detailed specifications were needed for ingredients, such as acetic acid, sodium benzoate, the propionates, calcium chloride and many others.

Others commented that certain additives should not be regarded as safe when much safer substitutes were available. Pharmacological study was suggested on some foods that are cooked to determine whether they contain heat decomposition products which might possibly be harmful.

The weighing of the wide range of comments will be a hard task. In closing, Mr. Goodrich told the ABA group that finalization of the list will require the most mature scientific judgment, and perhaps some improvement in the description and limitations on the listed substances.

The views of the scientists will not be ignored — but there must be a solid reason for striking from or adding to the proposed list.

"A realistic administration of the new law will not require unnecessary investigations of the toxic potential of substances that we have every reason to believe are entirely safe for their intended uses," Mr. Goodrich concluded.

Atlas files its third emulsifier petition

A petition has been filed by Atlas Powder Company, Wilmington, Delaware, for issuance of a regulation providing that polyoxyethylene (20) sorbitan monostearate may be used as an emulsifier in cake icings and cake fillings con-

Mr. Shipper: Are *1 preventing your shipments from arriving

The **DRI-PROTECTO CAR is a compact car offering maximum protection from heat or cold for those long hauls of straight loads where temperature extremes are encountered. Movements of dry commodities that require that extra protection for customer's satisfaction are best handled in this car. The DRI-PROTECTO CAR also offers complete protection against infestation.

The DRI-PROTECTO CAR is heavily insulated and offers a smooth, flush interior and can eliminate or greatly reduce car preparation costs. Consult with NORTH AMERICAN. Test cars furnished promptly.

**AAR Classification—R.B.

Important features of the DRI-PROTECTO CAR

1. Inside of doors are flush with sidewalls, eliminating doorway strapping and providing smooth wall from end to end.
2. Smooth varnished interior walls, reducing or eliminating sidewall cooperage.
3. Six-foot sliding steel doors, allowing free movement of mechanical loaders in and out of car. Palletized loading.
4. Fully insulated—sidewalls, roof, floors and ends.
5. Constant temperatures because of insulation reduces or eliminates condensation.
6. Extremely tight construction of car provides cleaner lading for consignee.
7. Availability of identical cars is beneficial to pattern-type loading.

*1 HEAT 2 COLD 3 INFESTATION

REMEMBER—IF IT'S NEW, IT'S NORTH AMERICAN

taining shortening.

The weight of the emulsifier would not exceed 0.45 per cent of the weight of the finished icing or filling. The petitioner further proposed that the emulsifier may be introduced as such or in admixture with the shortening used in the icing or filling.

This emulsifier is also known as Tween 60. Previously, Atlas filed petitions for Tween 65 and Tween 80.

Delaney amendment expected on color bill

A general color additives bill quietly passed the Senate — without committee hearings — during the past Congressional session. The bill, as reported by the committee, did not include a Delaney amendment which had been part of the draft measure.

On the House side, the Interstate and Foreign Commerce Committee scheduled no hearings on either the Senate bill or its own.

Chances are good for passage of a tolerance-setting color additives law next session. The House, however, will probably get its way and the law to emerge will allow no tolerance for possible cancer-producing additives.

Although the prevailing government-industry view is that such an amendment is unnecessary and burdensome, Rep. James J. Delaney (D., N.Y.) once again will push it through the House, say sources here.

Lest the Senate look too unconcerned about possible cancer-producing substances, it probably will agree to the Delaney Amendment.

Determining safety of food additives

A 108-page thorough review of various toxicity criteria has been prepared by the FDA staff, Division of Pharmacology. In the concluding chapter Dr. A. J. Lehman discusses some interpretative problems in evaluating the safety of

(*Continued on next page*)

these CULPRITS

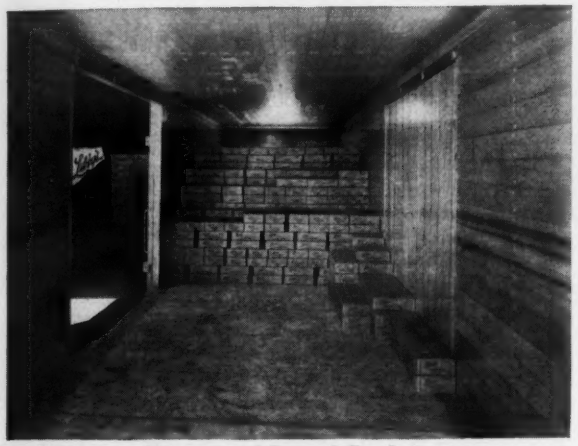
2 3

at destination in excellent condition?

DEFEAT THEM BY SHIPPING IN

NORTH AMERICAN CAR CORPORATION'S

DRI-PROTECTO CAR



Libby's Shipment of Canned Goods in DRI-PROTECTO CAR by Libby, McNeill & Libby

Wyeth Shipment of Drugs in DRI-PROTECTO CAR by Wyeth Laboratories, Inc.

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NORTH AMERICAN CAR CORPORATION

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North American Car Corporation
Sales Dept. Attn: Mr. H. R. Platt
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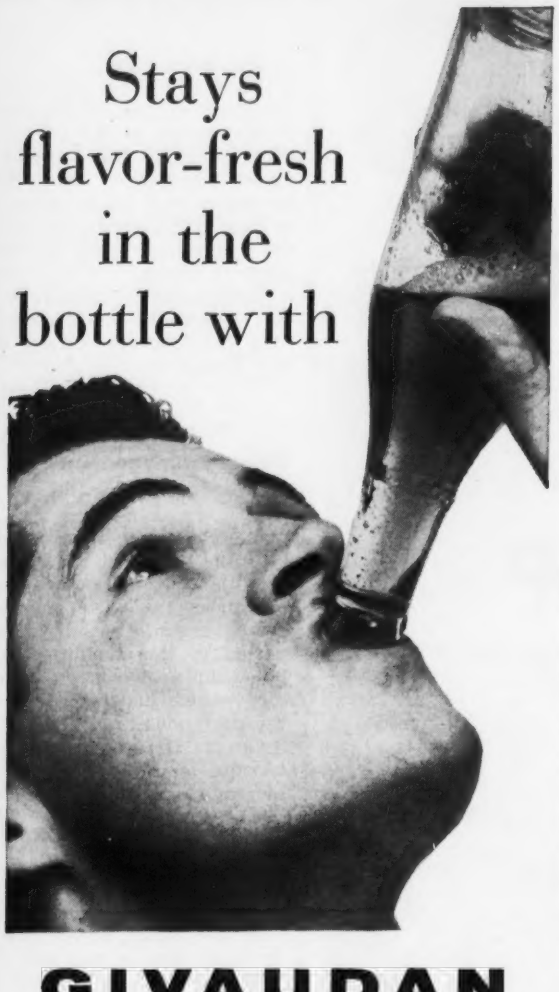

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food regulations

(*Continued from preceding page*)

food additives.

Copies are available from the Association of Food & Drug Officials of the United States, Business Office, Bureau of Food & Drugs, Texas State Dept. of Health, Austin 1, Texas. Price $2.

Hercules sponsors $500,000 toxicity study

Hercules Powder Company today disclosed it was sponsoring a $500,000 program, under which a basic study would be made of the toxicological properties of chemicals which Hercules supplies to the food packaging industry.

The program, developed with the guidance and cooperation of the Food and Drug Administration, will be conducted by the Industrial Bio-test Laboratories, Inc., Northbrook, Illinois, and will have two phases: the first covering acute and sub-acute toxicological studies; the second to be concerned with chronic toxicological studies ranging up to 3 years in length.

Results of study will be available to aid customers in complying with requirements of recent amendments to the Food and Drug Act.

Hercules markets over 50 types of resins that may become unintentional food additives under the food additives amendment.

Most all of the chemical materials under study by Hercules come in contact with food only as ingredients of packaging materials. Some of these chemicals, under certain conditions, can "migrate" from the package to food, although in most cases in amounts so small that radioactive tracer techniques are required to detect such migration.

STANDARDS

Concentrated tomato juice: Four companies have asked FDA to set up a standard for concentrated tomato juice. They would have the standard for tomato puree amended by inserting a new paragraph:

The name specified for the

AO's Goldberg Process Refractometer Prevents Waste ... Increases Profits

This in-stream Refractometer can be mounted in wall of process vessel, evaporator, vacuum pan, product pipe line or other location where continuous reading is desirable. Quickly determines total soluble solids in turbid and dark-colored concentrates such as jellies, jams, purees, juices and syrups.

1. **Prevents profit loss:** Determines exact endpoint of cooking batch by providing continuous, in-process readings of total solids. Prevents profit loss due to soluble solids "give away" by over concentration.
2. **Prevents product waste:** In-process readings on *hot* product eliminates old-fashioned external sampling with its consequent product waste and time loss. Savings in product alone, in most cases, will pay for the instrument in one season.
3. **Prevents errors:** Since product is always tested in-process, errors due to evaporation, temperature changes or opacity are eliminated. Readings are not affected by viscosity, foam, air bubbles or pulp and there's no need to correct for temperature differences between refractometer and process vessel. Accurate readings can be taken by anyone...no skilled technicians required.
4. **Three Brix ranges available:** 0-25%; 12-72%; 36-82% total soluble solids. Withstands pressure of 40 lbs. and temperatures ranging up to 250°F.

For further information write for Brochure SB10125

SPENCER

American Optical Company

INSTRUMENT DIVISION, BUFFALO 15, NEW YORK

5020 on Reader Service Slip.

food covered by this section is "tomato puree" or alternatively "tomato pulp." However, if the only tomato ingredient used is liquid from mature tomatoes of red or reddish varieties and it is seasoned with salt and contains not less than 21 per cent of salt-free tomato solids, the name "concentrated tomato juice" may be used in lieu of the name "tomato puree" or "tomato pulp."

Cheeses — Blue Cheese and Gorgonzola: The National Cheese Institute has petitioned FDA to amend the identity standards for these two cheeses to permit the use of certain vegetable food fats as optional ingredients for coating the rinds.

French and Salad Dressings: Methylcellulose has been approved by FDA for use as an emulsifier in these dressings. The amendment to the existing identity standards provides for from 27.5 per cent to 31.5 per cent in the methoxy content on a dry-weight basis.

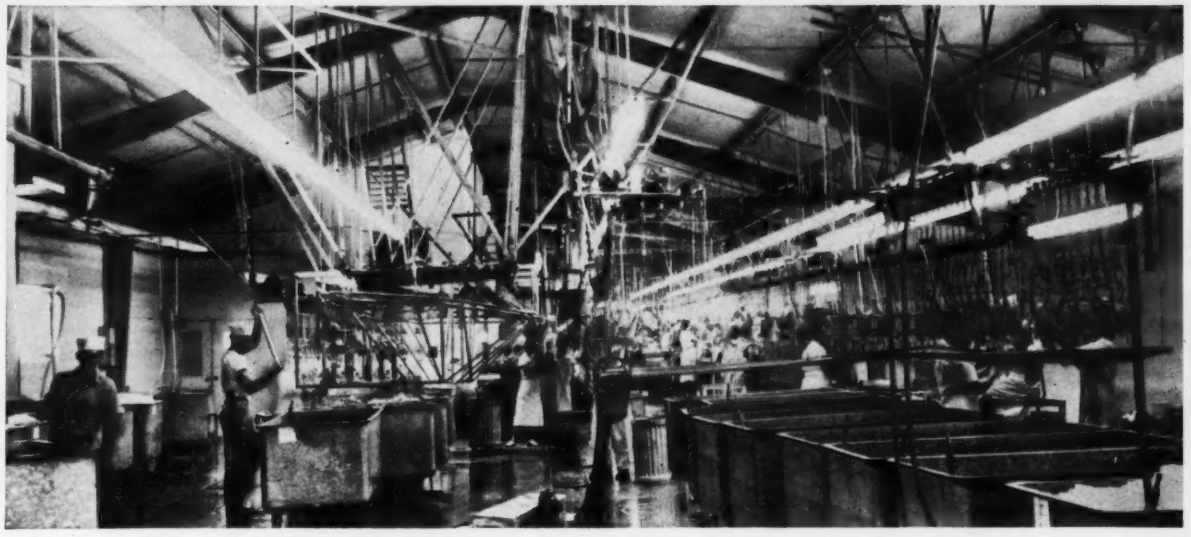
Peanut Butter: As expected, the proposed standard for peanut butter has resulted in a barrage of comments to the FDA.

And as might be expected those who would maintain the status quo or are concerned with law enforcement are in favor of a standard; those who are interested in further improvements in peanut butter are opposed to the standard.

The latter are now concentrating their efforts on making the proposed standard more flexible so that it will not in effect eliminate the incentives to making further improvements.

Canned Peas: California Packing Corporation has petitioned FDA to amend the standard of identity for canned peas to provide for use of the following seasonings as optional ingredients: dried green and red peppers, dried onions and dried garlic.

Peas so seasoned shall be labeled "seasoned with red peppers" or whatever seasoning is used. If the seasoning ingredient is dried, the name of the ingredient shall be preceded by the word "dried" or "dehydrated".



"Butler provided the building strength and space I needed for efficient poultry processing,"

says John Tyson, President, Tyson's Poultry Inc., Springdale, Arkansas

John Tyson, the largest integrated broiler operator in northwestern Arkansas, decided to erect his own poultry processing plant. At the time, he didn't know much about construction, but he knew what he needed for efficient poultry processing. And he wanted to build well, yet conserve his capital. That's why John Tyson chose the Butler system of building.

Column-free interiors make it easy to plan efficient, straight-line processing. Butler's truss-free gable area provides clear, unobstructed space for conveyors, lights and utilities. And all this equipment is suspended directly from the Butler structural system—without requiring additional supports. The gable roof encourages natural air circulation . . . makes the building easy and economical to ventilate. And, Butler pre-engineering and mass-production techniques effect substantial savings in material and labor costs.

Get full details on the Butler system of building. Learn how to build modern processing plants that meet the new building and sanitation provisions required under mandatory inspection. Contact your Butler Builder. Ask him about Butler financing, too. He's listed in the Yellow Pages under "Buildings" or "Steel Buildings." Or write direct.

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For more information on product at left, circle 5022 see information request blank opposite last page.

crisis

for fat-containing foods

becomes more firmly established

HOWARD P. MILLEVILLE
Editor

EVIDENCE as to the relationship of various types of fats in the diet to coronary heart disease in America is still far from conclusive. Nevertheless, certain changes in the type of fat in the diet are being recommended by various sources and are being promoted in national advertising.

Thus, recent ads of Corn Products and Wesson Oil stress that corn oil and cottonseed oil will reduce cholesterol and are important to good health.

It may very well be that sales executives of the edible vegetable-oil industry are fully convinced of the virtues of their products for preventing heart disease. But it would appear that a public relations agency is distorting the facts.

Consider the news release sent to food magazines. The complete text of this release is reprinted on the next page.

It implies that Dr. Stare, one of the country's leading public-health authorities, now is stating the case for justifying a change in the American diet.

Contrariwise, this editorial by Dr. Stare (co-authored with his colleague Dr. Lown) states: ". . . . Furthermore, no conclusive evidence exists that dietary modifications, specifically alterations in the quality or quantity of lipid (fat) intake affect the human atheromatous (hardening of the arteries) process. It follows that for the present, there is no justification for a general modification of the American diet."

Nearly three years ago, FOOD PROCESSING called the industry's attention to this problem of fats in foods which was then taking form.

Most of the authorities whose views we published agreed that any *major* changes in the diet of the *normal* population was unwarranted until more conclusive proof was obtained.

Last May, Dr. C. Glen King, Executive Director of The Nutrition Foundation restated this position: "Most of the leading scientists are still unconvinced that *moderate* changes in blood cholesterol furnish a reliable index to the effect of different diets upon risks of heart attacks."

He agreed, however, that there is good evidence now that linoleic acid as furnished in edible fats and oils is useful in adjusting a good balance in diets.

More recently he observed: "There are strong indications today that control of avoidable disturbances in fat metabolism in the human body, if understood more clearly, will avoid or decrease the incidence of coronary disease, cerebral strokes, fatty livers and other related ailments.

"The public should feel a sense of reassurance in the progress that nutritional researchers are making. The promise is that within the foreseeable future there may come forth a convincing concept of the way in which fat metabolism affects health."

In the August editorial of Dr. Stare and Dr. Lown, the present status is summarized: "A major contribution of the nutritional hypothesis has been the removal of atherosclerosis from the stagnant pool of degenerative disease where the only pathogenic factor was aging.

"The concept most consonant with available facts is that atherosclerosis is a complex metabolic derangement, predisposed to by heredity and initiated and sustained by environmental factors.

"Its natural evolution is modified by a host of variables including diet, sex, age, hemodynamic factors, hemoglobin concentration, metabolic rate, level of activity, tobacco consumption, and psychobiologic stresses and strain."

It should be pointed out that this editorial has for its objective a re-examination of the soundness of causative role of dietary factors in heart disease and to assess whether any practical recommendations regarding therapy and prophylaxis are warranted at this time.

The conclusion is: "In the present state of our knowledge it is reasonable to limit nutritional therapy to certain patients already affected with the clinical sequelae of atherosclerosis or having a strong family history of cardiovascular disease . . . [or] who exhibit a lipid abnormality in the absence of any recognizable atherosclerosis."

Caution in Order

Insofar as making any major changes in processed foods, it would appear that the food industry should still maintain a cautious attitude.

If corn and cottonseed oils should turn out to be effective in materially lowering serum cholesterol under certain conditions and hence presumably effective in treatment and prevention of various heart and vascular diseases, are they then medicines and subject to FDA control?

FDA has gone to court on cases involving oil products in capsule form which claimed to ward off hardening of the arteries. These products were offered with about the same kind of claims that are currently being advertised for corn and cottonseed oils.

Advertising, ordinarily the province of the FTC, comes under the jurisdiction of the FDA when such claims are made. *(Continued on next page)*

crisis

Less hydrogenation?

Last December, Dr. Irvine H. Page, former president of the American Heart Association, who is recognized for his conservative thinking, agreed that a large-scale revision in the eating habits was worth a wide-scale trial.

More specifically, Dr. Page, would reverse the animal-vegetable fat ratio in the diet. That is, from the diet would be eliminated most of the fatty meats, butter, whole milk, cream, most cheeses, egg yolks, oleomargarine, hydrogenated shortenings, coconut and cocoa products.

Added to the diet would be non-hydrogenated vegetable oils such as corn, cottonseed, soybean or peanut oil.

Such dietary recommendations have been translated into specific menus for the average housewife by no less an authority than Dr. Ancel Keys, famous physiologist in heart disease studies and his biochemist wife, Margaret Keys, in a recently published book *Eat Well and Stay Well.**

This book has the blessing of Dr. Paul Dudley White, President Eisenhower's personal physician who authored the foreword for it.

Dr. Jolliffe, Director, Bureau of Nutrition, NYC Dept. of Health has obtained considerable local and some national attention for his recommendations regarding diet.

In general, he has agreed that the evidence for these recommendations is not conclusive regarding heart disease, but he argues: ". . . . the fact that we don't know exactly why the blood cholesterol is lowered by these oils in their natural state does not prevent us from using this knowledge to improve our present-day diet."

Considering that one out of three living Americans will probably die from heart disease his argument has strong emotional appeal.

*Doubleday & Company, Inc., 1959

Filled milk best for infants

In the past, cow's milk and other substances for use in place of human milk have been modified and fortified to make them similar to human milk in vitamin, protein, mineral, carbohydrate, and *total* fat content. However, in most cases, the fatty-acid content has not been adjusted.

Human milk contains more of the unsaturated linoleic acid than cow's milk. Recent studies sponsored by the USDA at the University of Texas School of Medicine suggest that this fatty-acid content may account for the superiority of human milk over cow's milk in infant feeding.

Researchers gave babies all they wanted of various forms of cow's milk formulas or human milk. The infant's food consumption varied with the amount of linoleic acid in the diet. Yet all infants maintained the same rate of growth.

At the lower levels of linoleic acid, the infants demanded more calories indicating that at higher linoleic acid levels they could make more efficient use of their food intakes.

The additional calories required in the diet compared to human milk were 82 per cent for a skim-milk formula with 0.1 per cent linoleic acid, and 24 per cent for an evaporated milk formula with 1 per cent linoleic acid.

For infants, the Texas studies indicated that 4 per cent linoleic acid was optimum. Above 4 per cent, which corresponds to the content in human milk, there was no increase in efficiency of calorie utilization for weight gain.

Thus, there is some basis for considering filled milk — milk in which the butter fat content has been replaced with other fats — a superior product if these other fats have high linoleic acid content. (Incidental-

(*Continued on page* 38)

News release
received August 24, 1959

Special to food magazines

Proper Food Most Important Factor in Control of Heart Disease, Heart Experts Say

(Note to editors: The question of just how important food intake is to the onset of coronary heart disease has been of keen interest for some time. An editorial on the subject in the American Heart Association's official journal is therefore of particular current interest.)

In a lead editorial of the August issue of "Circulation" Magazine, the American Heart Association's official journal, proper diet is described as the factor most apt to affect the onset of heart disease and atherosclerosis.

"It appears easier," the editorial states, "to change individual nutrition than heredity," or any of the other factors thought to be associated with coronary complications. Dietary factors, the editorial declares, are now generally considered to play a causative role in various types of heart disease.

The amount of fat in the daily diet, the editorial states, appears to have a key relationship to elevated cholesterol levels and atherosclerosis, the most common form of heart disease.

Elevated cholesterol levels, or hypercholesteremia, the editorial states, is an important key in this area. "In any population," says the editorial, "coronary disease is more prevalent in groups exhibiting hypercholesteremia."

While there may be certain discrepancies in statistical, medical reporting in various parts of the world, the editorial says, "studies of different world populations suggest that serum cholesterol levels are highest in those populations with the most abundant fat intake." The editorial states that other factors do not appear to be as critical.

"While world-wide epidemiologic surveys," the editorial continues, "do not provide evidence for sole association between dietary fat and heart disease, these studies do indicate that when the diet is low in animal fat, there is a low incidence of coronary artery disease."✚

"The most significant reduction of cholesterol concentration has been achieved in patients on rigid formula diets where fats high in polyunsaturated fatty acids such as corn oil or cottonseed oils were substituted for other fat components. When fats rich in polyunsaturated fatty acids are merely added to the diet," the editorial goes on, "a weight gain may follow and the cholesterol, perhaps not lowered at all, may even be increased."

Best control is achieved, the editorial summarized, by reducing the over-all calories in the diet, including fewer fats, which "should be rich in linoleic and arachidonic acids," such as are prevalent in corn oil.

The editorial, entitled "Atherosclerosis, Infarction, and Nutrition," was authored by Drs. Bernard Lown and Frederick J. Stare of the Department of Nutrition, Harvard University School of Public Health, and the Medical Service, Peter Bent Brigham Hospital, Boston, Massachusetts.
(End of news release)

✚ EDITOR'S NOTE: As one example of how the release misleadingly quotes out of context consider the four sentences in the original editorial which follow the statement marked with the asterisk. They are: "But a diet low in fat is usually also deficient in animal protein and sucrose, is usually high in fiber and starch, and differs in its composition in minerals and vitamin content. Each of these factors has been shown to affect the cholesterol level in experimental studies with animals.

"Finally, a low animal-fat diet generally reflects a state of underdevelopment of a group or nation with a host of attendant social, cultural, and medical differences, all of which may exert an influence upon the incidence of atherosclerosis.

"Generally such groups are economically underdeveloped, with a high infant and child mortality (which may remove susceptibles to atherosclerosis), a high level of energy expenditure, less sedentary habits, different work patterns, different goals and motivations, and not the same social stresses and tensions that characterize societies with a high consumption of animal fat."

Two unusual approaches on how to

CUT HANDLING COSTS

A national authority on material handling demonstrates how simpler pallet loading patterns will enable you to . . .

MAKE THE MOST OF YOUR WAREHOUSE SPACE!*

IRVING M. FOOTLIK, President
Irving M. Footlik & Associates
Skokie, Illinois

A 25 per cent increase in spatial efficiency of warehouses! Reduced cost of damage due to carton failure! Automatic pallet loaders at a fraction of the expected cost!

These can be the rewards if "column stacking" of unit loads in "block patterns" is substituted for conventional interlock or criss-cross stacking patterns.

For years, material handling men have used the cry — "Avoid square cartons. Give us rectangular shapes. Make them long and narrow. Give us criss-cross patterns. We must 'tie in' the cartons so that when stacked they will not fall off a pallet."

If examined closely, this shows up as a mistaken concept because it **needlessly sacrifices storage efficiency in order to achieve greater load stability.**

Had we instead attempted to find a better way to stack and store the cartons we had, we would have found more structural strength by avoiding the criss-cross patterns, and employing a block pattern.

As for the load "tie-in" argument, comparable load stability can be had with the block pattern concept using one of several simple means described later.

Exploits cartons' strength

Column stacking takes fullest advantage of the corrugated cartons' strongest feature — the corners. Criss-cross stacking patterns, on the other hand, rely "heavily" on the structural strength of the products contained within the boxes for support of the load.

This latter is a mistake, in that the corrugated board is soft, and the cans make indentations in the case flaps. Result is that the cans sink into the board, and anywhere from ⅛ in. to ¼ in. of space develops at top of case.

When this effect multiplies on the pile, it results in breakdown of the corrugated cartons. The product may be safe, but the cases look as though there has been damage.

In contrast, by column stacking and letting the strong corners of the cartons carry the load, we not only can min-

(*Continued on next page*)

*Incorporates suggestions by Robert Stevens, Fibreboard Paper Products Corporation, San Francisco 11, Calif.

Instead of building grocery stacks higher and higher, why not . . .

ELIMINATE WAREHOUSING FOR KEY VOLUME ITEMS?

- Tightly scheduled shipments using small pallets may be answer!
- How small? Until settled, unwise to freeze pallet-size standards!

GERALD A. FITZGERALD
Professor of Food Engineering
University of Massachusetts
Amherst, Massachusetts

THE time may be ripe to do away with the "sacred inefficiency" of current warehousing practice for key volume items.

Instead of building grocery stocks higher in manufacturers' and distributors' warehouses, why not eliminate warehousing as much as possible for such volume staple items as sugar, canned soups, cake mixes, soaps and paper products — which have a steady, non-fluctuating demand?

These and similar items constitute probably in excess of 50 per cent of the grocery dollar, and possibly 90 per cent of grocery handling costs. Why re-handle, re-handle and re-handle them?

What has been done

In another industry, General Electric and other large companies have been able to demonstrate savings at half-million dollar levels in department after department by reducing investment in warehouse space and in equipment for volume items, and by maximizing turnover of minimum investments in inventory.

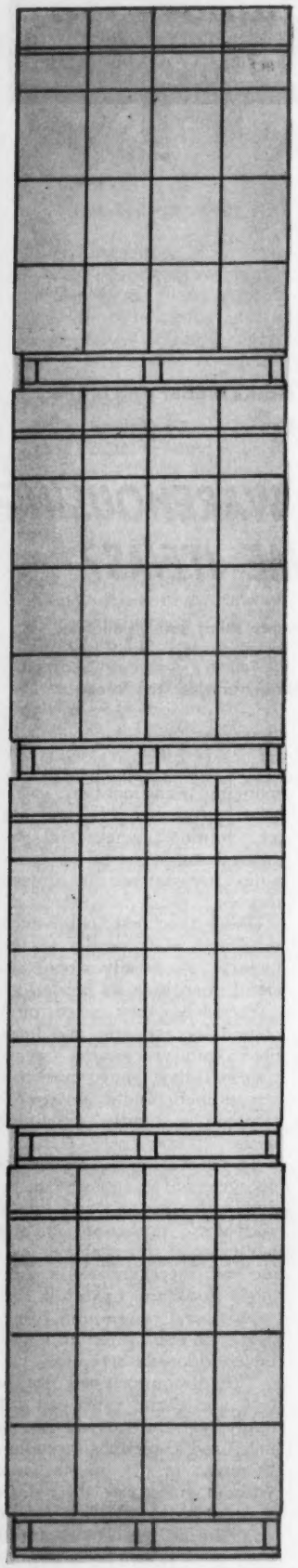
Under the "new look," even nuts and bolts arrive at the factory in a steady stream, in small quantities, as needed.

Formerly, they were purchased by carloads, and handled and rehandled many times. Today, they enter the streamlined production operation on a tightly scheduled basis.

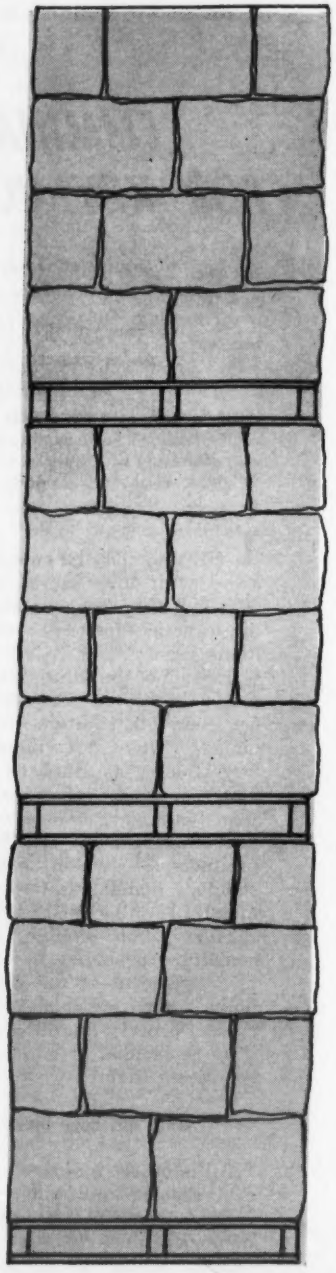
To effect such an economical procurement program in a wholesale grocery or chain warehouse operation, current methods of purchasing fast-moving merchandise in carloads to obtain maximum discounts and minimum transportation costs must no longer be considered sacred.

The discounts need not be lost, and carlot rates can still apply, yet the carload can be delivered directly to retailers in units of six to 48 cases without going into the central warehouse at all. This can be done for at least 100 items in

(*Continued on page 27*)



"Battle of the bulge" is fought by cartons stacked in conventional interlocking pattern (below) whereas block pattern loads at left, with weight distributed evenly on strong carton corners, stack 25 per cent higher without fatigue



Irving M. Footlik, material handling and plant layout consultant, is a mechanical engineer with 18 years of practical experience in handling of soft goods, hard goods and related lines.

A founder member of the American Material Handling Society, and an awardee of the AMHS Certificate of Merit, he is best known for his palletless warehouse designs, and for eliminating excess manpower in the grocery industry.

Currently, he heads his own firm of consulting engineers, and is material handling consultant to the National Metal Trades Association and its 1400 members, the IGA Wholesale Grocers throughout the US and Canada, and is secretary to the College-Industry Committee on Material Handling Education. He is also a guest lecturer at several universities throughout the country.

Gerald A. Fitzgerald, Professor of Food Engineering at the University of Massachusetts, Amherst, was the pioneer food engineer in the original Birdseye laboratories.

In the 1940's he became director of the Frozen Food Foundation and dealt with some of the problems of food distribution.

In the interim until joining the Food Distribution Program at the University of Massachusetts in January 1958, he was a private consulting engineer to the food processing and distributing industries.

During the past two-and-one half years, he has been gathering data on the subject which he calls "The ABC System of Grocery Products Distribution." Included in this overall project was a study of the System designed for a 10-supermarket chain on a British island in the Caribbean (see box on facing page).

Make the most

(*Continued from preceding page*)

imize this type of damage, but actually achieve higher stacks.

Where we formerly could stack 16 ft high (and incur damage), 20 ft can be obtained, giving a 25 per cent increase in storage height.**

Adding stability

Admittedly, to put the column stacking or block pattern concept into effective use, the load must be given some extra stability — especially while being handled by lift truck or while in transit over the road.

One method, for fork truck handling, is to move the forks to the extreme outer limits. Then, when the pallet is picked up, the "bow" in the pallet structure will cause the load to tilt inward.

This effect is more easily achieved when pallets with ⅝ in.-or-less deckboards are used. Object is, of course, to make the load bow inward by putting a strain on center of pallet.

Another means of "tying" a block pattern load together is by inserting a sheet of paper on the next-to-the-top layer. This sheet, preferably of rough-texture kraft, should be equal to or larger than the entire layer.

Weight of top layer of cartons acts to hold down the paper on the load beneath. With very small cartons, it is advisable to repeat this "sandwiching" procedure two or three times per pallet load.

A third stabilizing method is to tie the top row of cartons with string or tape. A variation of this method employs two pieces of string or rope, held together with a screen-door spring in the center.

In the latter instance, in making long-distance shipments, some consignees are returning to the shipper by express the material used to hold together the top layer. (Some companies have cut up old innertubes and used these to bind together the top layer of a pallet load.)

A fourth approach is being made by the corrugated carton manufacturers — working, in some cases, with manufacturers of adhesives.

Both kraft papers with stronger fibered surfaces and chemically treated surfaces show promise in reducing slippage of upper layers on pallets. In some instances, rosin has been added to the printing inks used on the flaps.

(*Continued on page* 41)

**Successfully stacking block-pattern loads beyond five pallets high would depend partially on certain extraneous factors, such as an absolutely level floor.

Typical of good current warehousing practice, this 7½-acre food distribution center (serving 100 supermarkets) is in line for changes if either Footlik's plan for higher stacking or Fitzgerald's direct-to-retailer shipments of volume items gains momentum. Note standard-size pallet "slots" painted on floor — numerical locations for inventory corresponding to data stored in electronic data processing equipment.

Eliminate warehousing

(*Continued from page* 25)

a 4-5000 item assortment.

These 100-plus volume grocery products ("A" items — see box) can be delivered direct from manufacturer to retailer in unit loads on a serialized schedule so as to minimize wholesale warehousing, rehandling, purchasing, inventory, and equipment operating and capital investment costs.

The smaller the size of such unit loads, the greater the number of items which can be unitized. Since these are the volume items, even the smallest supermarkets can receive such items in at least single pallet-load units, provided the pallet is small enough — ideally 20 by 24 in.

However, even the 32 by 24 standard pallet might be used for four-, six- or eight-case units.

Handling slower-moving items

Next most costly operation is that of the one-to-five-case order. Instead of putting such items ("B" items) on shelf racks in the main warehouse, these too can be procured on a synchronized delivery schedule based on historical patterns of the same or similar group of retailers and communities served.

These cannot be shipped directly from manufacturer to retailer because there must be a breakdown point, preferably at a railroad siding, where full pallets of such items can be transferred via live racks directly to waiting delivery trucks.

The warehouse job (at the railroad siding) is that of keeping the live racks full and the order selectors traveling a minimum number of steps per order. There are at least 500 items of this character in each 4-5000 item assortment.

This leaves at least 3400 items ("C" items) which may

(*Continued on page* 41)

What is the ABC System?

The "ABC System" of grocery product distribution proposed by Prof. Fitzgerald would eliminate warehousing entirely for a small number of high-volume items; and minimize it for a larger group of medium-volume products.

The system divides all ordinarily warehoused products into three "classes:"

Class A — Items that can be ordered several weeks or months in advance for delivery in unitized loads semi-weekly, weekly or bi-weekly direct to retailers. Contract schedule would be long-term and would have built-in adjustment to allow for last-minute changes — perhaps two weeks before shipment is made. Delivery would be in "units" of 6, 8, 12, 24 or 48 cases (unitized, on pallets or not).

Class B — Items that are regularly ordered by retailers in units of one to five cases per order, to be held temporarily on live racks at warehouse level.

Class C — Items which are seldom, if ever, ordered by retailers in units greater than a single case, and are ordered as a rule on a bi-weekly or longer-interval basis.

Need for such a system — already in use in modified form in the mechanical electrical industries — is illustrated by the findings in a study of a 10-store supermarket chain warehousing operation.

Of some 5370 items handled by this chain, 70 per cent produced only 20 per cent of the sales volume, whereas the other 21 per cent of the items produced 80 per cent of the sales volume.

It is this 80 per cent by volume — the "A" and "B" items — with which the ABC System is concerned.

— The Editors

Third in a series of exclusive interviews with California Packing Corporation's top executives

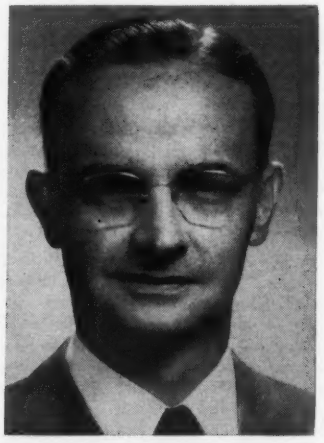
How Calpak meets

Modern problems

KARL ROBE, Associate Editor
Based on an interview with
WM. HERBERT CARR, Vice President and Treasurer in Charge of Financing, California Packing Corporation

SUMMARIZING the factors which contribute to successful corporate financial management, Wm. Herbert Carr, Calpak's Vice President, Finance, emphasizes: "Be alert and stay ahead of ever-increasing changes and pressures in our complex economy."

Just how good Calpak's financial record has been in being alert and staying ahead is reflected in its enviable growth trends of sales, earnings and return on invested capital. These favorable patterns have evolved from a wise nurturing of a sound financial condition.



WM. HERBERT CARR

. . . joined Calpak in 1941 and was appointed controller in 1942. He served in this capacity during the war years and in 1946 was elected treasurer and member of the finance committee. In 1948 he was elected vice president, director and member of the executive committee and in 1955 was made Vice President, Finance

Such financial accomplishments may be largely attributed to Mr. Carr's insistence upon keeping abreast of the latest techniques and tools of the trade.

For example, take the matter of cash budgeting. Cash planning and control has achieved a high degree of effectiveness and accuracy at Calpak.

Some analysts, in going over the corporation's Annual Report, have been surprised at the "cash on hand" figure. They look at Calpak's cash balances as of February 28 — the date the books are closed every year* — and shake their heads that it is so low. They forget that the canning business has its unique aspects — that it is a dynamic, changing industry — and that the February 28 figure is only an instantaneous picture of a year-around activity.

Seasonal borrowings reach their peak in October or early November, while the low point comes in late spring — April, May and June. With the books closing near the mid-point, cash balances may be considerably lower than the amounts required during the peak operating season. The picture would be very different with another closing date.

The real criterion of financial health, however, no matter what amount you keep in the till, is to have cash available when needed.

*Closing their books on different dates complicates the comparison of financial statement figures of the leading canners and packers.

Calpak's business requires operating cash balances of between $5 and $10 million a day, depending on the time of year. With precise financial controls and close forecasting, these fluctuating needs are readily met from internal cash flow, supplemented by borrowings from banks and other financial sources at the most favorable interest rates.

Calpak's excellent standing in the financial community has, of course, been an important factor.

Stressing the fact that debt costs money, Mr. Carr emphasizes that money in the till can be as much an inventory problem as canned peaches in Plant 48 — and requires as careful management.

Keeping abreast of financial trends

An important aspect of sound financial management is knowing when to borrow at the most advantageous interest rates. This requires continual surveillance of general economic and financial conditions.

To meet this need, Mr. Carr has developed a weekly-posted book of financial indicators to aid him in following the money market trends.

Raw materials for these indicators are obtained from the Federal Reserve Board and from banks with which Calpak maintains a close and favorable relationship. In addition, key contacts in a number of financial centers help to supplement and interpret the data.

By keeping abreast of general financial conditions and with astute internal financial planning, Calpak was able to cut the costs of last year's short-term seasonal borrowing by $1¼ million, as compared with the preceding year.

Shifts in food financing

Shifts in food financing have had a tremendous financial impact on canners in the past few years. One of the major shifts has been in the responsibilities of warehouse storage from the wholesaler to the processor. (See bar chart for details.) This means a heavier financing burden for the food manufacturer.

Expansion and inflation have also caused major changes in financial management.

For example, before World War II, Calpak showed a low debt relationship to total capital employed. In 1941, the corporation's long-term debt was $4 million, compared with $51 million total capital.

Contrasted with current figures of $51 million long-term debt and $193 million total capital, this represents a very material change, the ratio between debt and capital being 7.8% in 1941 and 26.4% at the end of the most recent fiscal year.

This shift illustrates foresightedness in taking advantage of a trend. The current corporate tax structure encourages debt financing. Calpak has obtained long-term loans at very favorable interest rates.

# of food company financing

New plants, new products, new processes, new equipment and increased inventories necessary for growing business must all be paid for. In an inflationary period, depreciation does not even cover the cost of replacement of worn-out equipment.

A substantial part of the required funds have been obtained from profits. Short-term and long-term borrowings must also fit in the picture. The financial management of Calpak has shown a particular ability to coordinate these factors to the corporation's advantage.

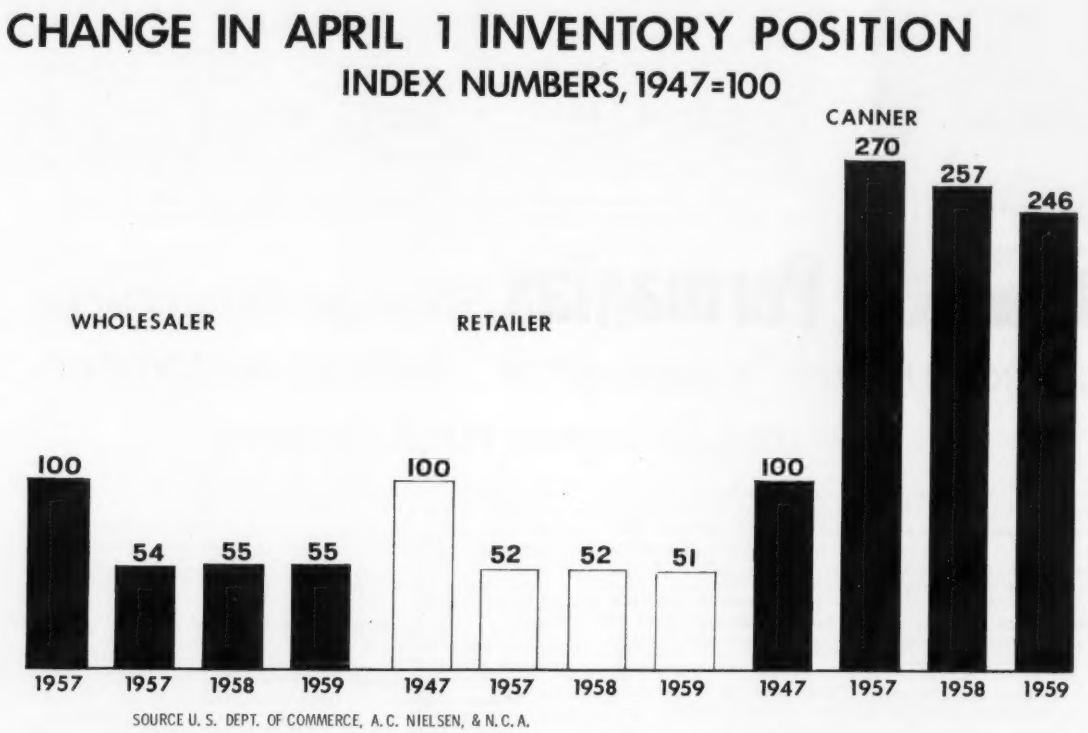
Organization and training

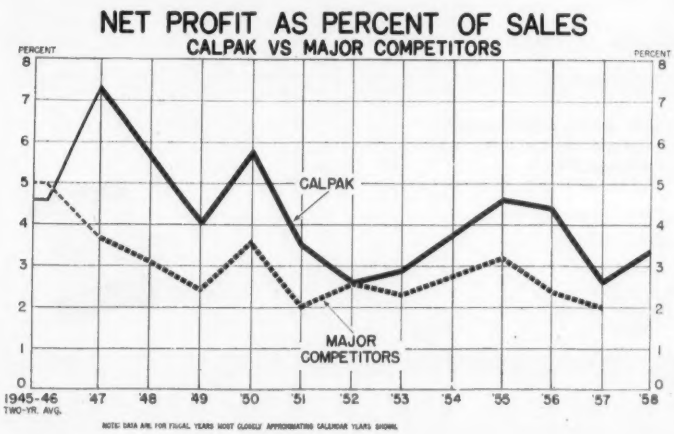
Calpak's present financial organization had its beginnings in the 1940's. Vice President Carr, who also holds the title of Treasurer, and W. T. McGillivray, Controller and a Director of the corporation, were brought into the organization at that time. Mr. Carr is a member of the Finance Committee, which decides basic financial policy.

In the conduct of Calpak's financial affairs, a number of training programs provide a steady stream of qualified employees at all levels of the finance and accounting organization.

The accounting and business training programs take carefully selected graduates from colleges and universities throughout the West for on-the-job training in various divisions of finance and accounting.

(*Continued on next page*)





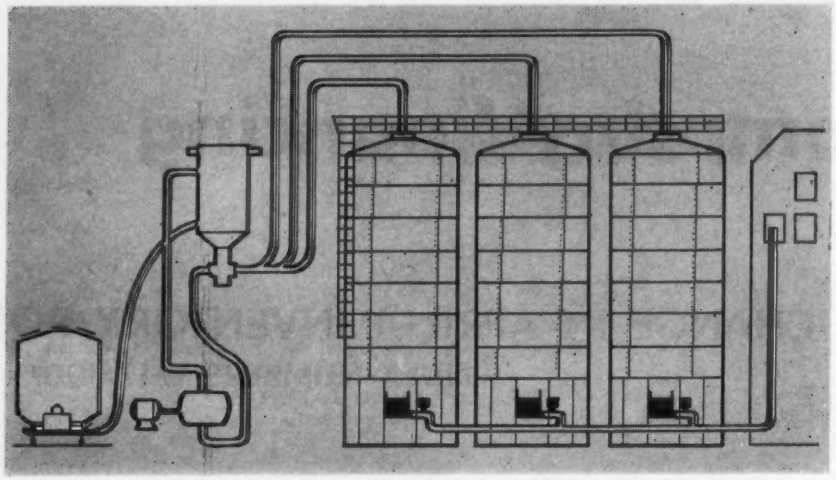
Above chart illustrates one of the many changes in the canning industry with which a food finance man has to deal.

Prior to World War II, the grocery wholesaler assumed the function of carrying a year-around supply of canned goods for retailers. Grocery warehouses were largely cleaned out by each April 1st.

With the growth of the big self-service grocery units, this storage function was shifted to the processor. Now it is the responsibility of the producer to maintain year-around stocks. At the same time, the grocery warehouse has become largely an order-assembly area.

This shift required some astute handling of funds and borrowings.

Here's a "TRIPLE-THREAT" to the high cost of handling bulk materials



Here's a typical vacuum-pressure system for Permaglas Storage Units. A. O. Smith distributors have the "specialized" know-how to plan and help solve your bulk materials conveying problems.

Permaglas® *Storage Structures ...mechanical "sweep-arm" bottom unloader ...pneumatic conveying system*

Permaglas Mechanized Storage Structures offer a "dynamic challenge" to the higher cost, conventional methods used in handling and storing of bulk materials. You can realize lower costs in your processing operations when *slow and expensive* methods are replaced with *Permaglas* Mechanized Storage Units. Equipped with the *exclusive* "sweep-arm" mechanical bottom unloader, they can be incorporated into an efficient pneumatic or mechanical conveying system. Here's how you benefit:

- A completely enclosed, "push button controlled" bulk materials handling system is now possible.
- Incoming "bulk" cars or trucks can be unloaded pneumatically or mechanically directly into the *Permaglas* Storage Structure.
- The mechanical "sweep-arm" bottom unloader discharges bulk materials directly into the conveying system to the process lines.
- This means substantial savings in labor, eliminates bags, bins, barrels, handling equipment and the maintenance of this equipment . . . eliminates material losses by breakage or spillage . . . helps prevent hazardous accidents.
- *Plus this exclusive feature. Permaglas* Storage Structures are glass-fused-to-steel construction* both inside and out. Makes possible sanitary, easy to clean bulk materials handling systems. Eliminates corrosion, safeguards products from contamination and infestation. Reduces structure maintenance to a minimum.

This low cost way to handle and store bulk materials can be accomplished with minimum capital investment. Certainly it is worth further investigation. Mail coupon for details.

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5023 on Reader Service Slip.

Calpak

(*Continued from preceding page*)

A supervisory development program is conducted for employees with demonstrated management potential.

These activities help to provide a reservoir of talent so that all key positions may be filled from within the organization.

Calpak first

Alert and progressive financial management have garnered for Calpak a number of "firsts" in the industry by initiating significant new processes and improvements.

The corporation was the first in the industry to adopt the last-in-first-out (LIFO) method of valuing inventories.

It was also the first in the industry to install an IBM tape 650 electronic computer. System studies were initiated in the mid-40's which made it possible to pioneer in the new field of electronic data processing ten years later, without the back-tracking and lost motion which has characterized many such installations.

Furthering this program, in the fall of 1958 a RAMAC 305 was added.

Timely information rapidly available

The special capabilities of this electronic data processing system have made timely information available to the corporation much faster than was previously possible, at substantial cost savings. In addition, the equipment is currently used to (1) process and summarize new data, (2) explore and evaluate alternative courses of management action, (3) simulate business problems and (4) forecast sales.

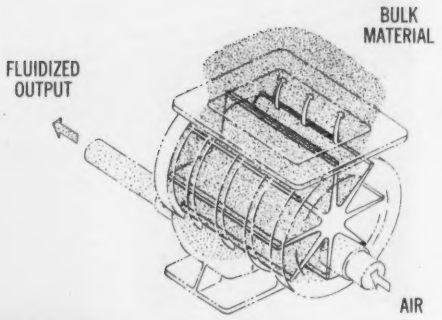
Calpak is closely following developments in this dynamic field and is planning now for the installation of an IBM 7070 in the fall of 1960, which will utilize still more advanced techniques.

This is further evidence of the corporation's continuing policy to take advantage of new or improved equipment and systems as they are proven feasible. END

'Why Fluidize...?' 'It Costs Less'

General Mills big mix plant addition is almost entirely 'fluidized' for handling cake mixes and components — over 45 separate systems: use smaller piping; curtail operating costs; reduce expensive dust collection costs

TERRY TAYLOR, plant superintendent
CRAIG MATHEWS, process engineer, General Mills, Inc.
as reported by **KARL ROBE**



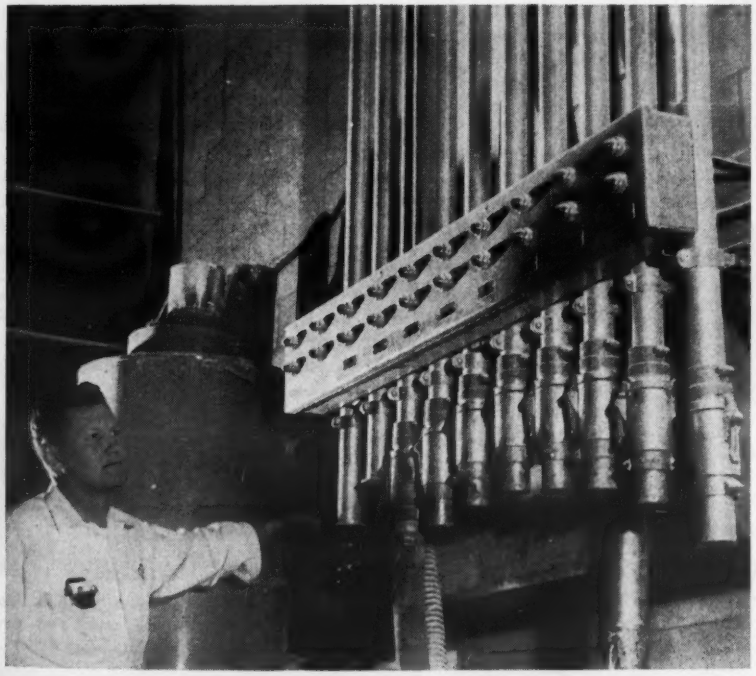
WHAT IS FLUIDIZING?

Fluidizing is a process for conveying finely divided solids by means of a relatively small amount of air. The solids are intimately mixed with air, and this product-and-air mixture then is pumped through tubes in a manner similar to pumping liquids.

This sketch shows how the "Fluidizer" valve works. Bulk material feeds from above into successive pockets of the valve as it rotates. Air mixes with product as pocket revolves toward outlet port. Incoming air forces fluidized product through outlet port into conveying tube. Inlet and output air ports are partially staggered, so that discharging pocket carries some pressurized air to bulk material inlet (note small arrows at top of valve) to promote fluidization and to prevent bridging or cavitation.

Three of the 45 fluidizers at General Mills, Lodi, Calif. In foreground, rotary valves meter six separate ingredients into scale hoppers for weighing and batch mixing

Battery of ten two-in. lines shows simplicity and versatility of small-tube dense-flow fluidizing systems. This "pipe organ" is located at central bag-unloading station where accessory ingredients such as salt and leavening agents are fluidized to storage bins. Flexible hose attaches to tube delivering material to appropriate bins



"WITHOUT fluidized conveying, the selected design of our present automatic mix plant would have been impractical." These are the words of engineers at General Mills' huge Lodi, Calif., plant which produces bakery mixes and cereals for the 11 Western States.

Products fluidized at the Lodi mix addition to the main plant include flour, salt, sugar and mixtures (including products containing high fat percentages).

To handle these products by other pneumatic or mechanical methods would have increased investment costs in material handling equipment by more than double the cost of the fluidized, or dense flow, systems.

Fluidizing principle of transporting powdery or granular material means that a small amount of air is introduced into the material, "fluffing it up" so that it can be "pumped," somewhat like a liquid.

For those products that can be fluidized, this offers several advantages. In a nutshell, here are the benefits and some of the limitations of fluidized handling:

Capital investment: Most lines at the Lodi plant are 1½ and 2 in. in diam—considerably smaller than the 4- to 10-in. or greater tubes required in alternate methods.

Extremely low air ratio in product means that large dust collection systems are unnecessary. In some cases, such systems can cost more than the cost of an entire fluidizing line.

In general, air is removed from product at destination, merely by passage through simple fabric "socks" as product drops into a hopper.

Installation benefits: Aluminum tubing is quickly installed overhead by plant personnel, using simple hangers.

There are practically no restrictions as to where material can be moved in plant. Flow can be vertical or horizontal over relatively long distances (over 400 ft is not impractical).

Only restriction is that bend radii be gently curving — a good rule-of-thumb is: Radius of bend should be ten times the diameter of the pipe.

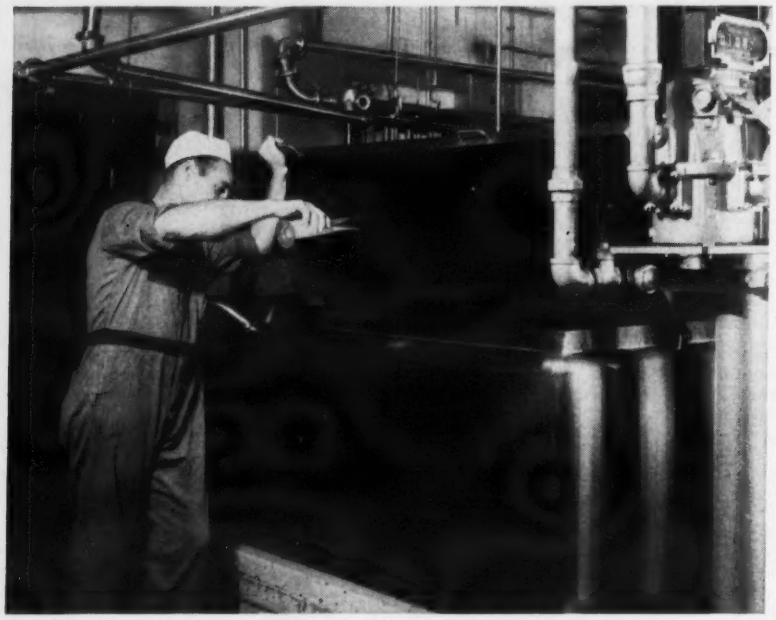
Operating costs: A comparison with other handling methods reveals substantially lowered operating costs. For example, to fluidize and transport 200 lb per min of a flour-mix product 300 ft requires a five-hp blower.

To pneumatically transport the same product 100 ft at rate of 50 lb per min can re-

(*Continued on next page*)

SILICONE NEWS from Dow Corning

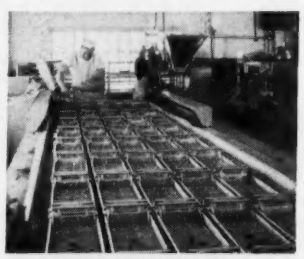
Prevent Costly Foam



Dow Corning Silicone Defoamers Reduce Waste, Increase Capacity

Foam is costly . . . it takes up production space, slows down processing, causes maintenance problems—may even create a fire hazard! You can control foam once and for all with the most effective antifoams ever developed: Dow Corning silicone defoamers.

Odorless, tasteless, and physiologically harmless, Dow Corning silicone defoamers are used extensively in processing and packaging foods, syrups, and antibiotics. Effective at extremely low concentrations and safe to use, they neither alter nor contaminate the end product. Dow Corning Antifoam A may be used in nonstandard foods at concentrations to 10 ppm; water-dilutable Antifoam AF Emulsion may be used at concentrations to 34 ppm.



IN FREEZING MIXES

A typical application: in making Fudgsicles, foaming of milk, chocolate and other ingredients caused numerous rejects of frozen bars and also cut production space. Antifoam AF Emulsion added to the processing prevents foam . . . helps keep production up and costs down.

Write for a FREE SAMPLE giving an indication of your foaming problem and whether it's in an aqueous or oil system. Address Dept. 5722.

IN ANTIBIOTICS

first in silicones

Dow Corning CORPORATION

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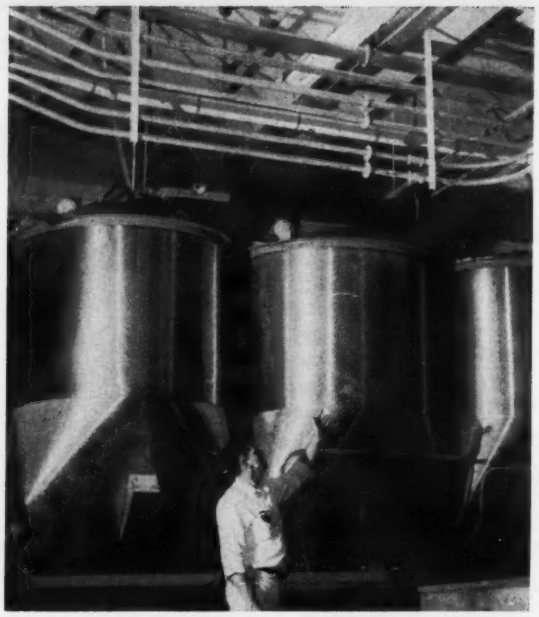


These ceiling lines carrying ingredients from bulk storage to plant areas over 200 ft away demonstrate ease of installation and small hangers required

(*Continued from preceding page*)

quire as much as 24½ hp in alternate systems.

To express this in dollars and cents: if it costs approximately 10c per hr to move 200 lb of product in 2-in. pipe, cost could be 40c per hr to move 50 lb per min of same product by former pneumatic means over a shorter distance through a larger pipe.

Low cost maintenance: Twenty-foot lengths of aluminum pipe are easily handled by one man. New installations now have quick-couples at each joint. No tools are required to remove sections for cleaning.

Operator can quickly remove section and clear it if trouble should develop, without waiting for maintenance crew.

Air-to-product ratio: For easily fluidized materials such as flour, only one lb of air is used to move 125 lb of product, at rates of up to 425 lb per min. In a pneumatic system, this ratio is approximately two lb of air for one lb of product.

For denser materials such as salt and granulated sugar, air-to-product ratio is around one lb air to 20-25 lb of product. Sugar can be transported at rate of 200 lb per min in a four-in. line.

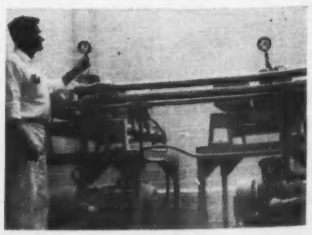
Design factors: Internal friction of piping is not a design factor for runs under 300 ft long — so long as lines are sweeping. Blowers in series are used for longer runs.

Another engineering factor must be considered, however; proper balancing of three separate variables must be achieved for maximum efficiency. Changes in any of these variables will affect handling efficiency: product density, length of line air-to-product ratio.

Similarly, if products of different densities are to be conveyed in the same line, air-to-product ratio must be adjusted when product changes are made.

(Fluidized conveying systems are products of The Fluidizer Company, Division of Superior Separator Company, Hopkins, Minn.)

For more information circle 5025 on Reader Service Slip.



A bank of four fluidizer blowers shows how the small unit can be stacked for space saving

Continuous liquid cyclone separator

Broadens application of continuous centrifuge

Western Condensing improves process for recovering lactose crystals from concentrated whey

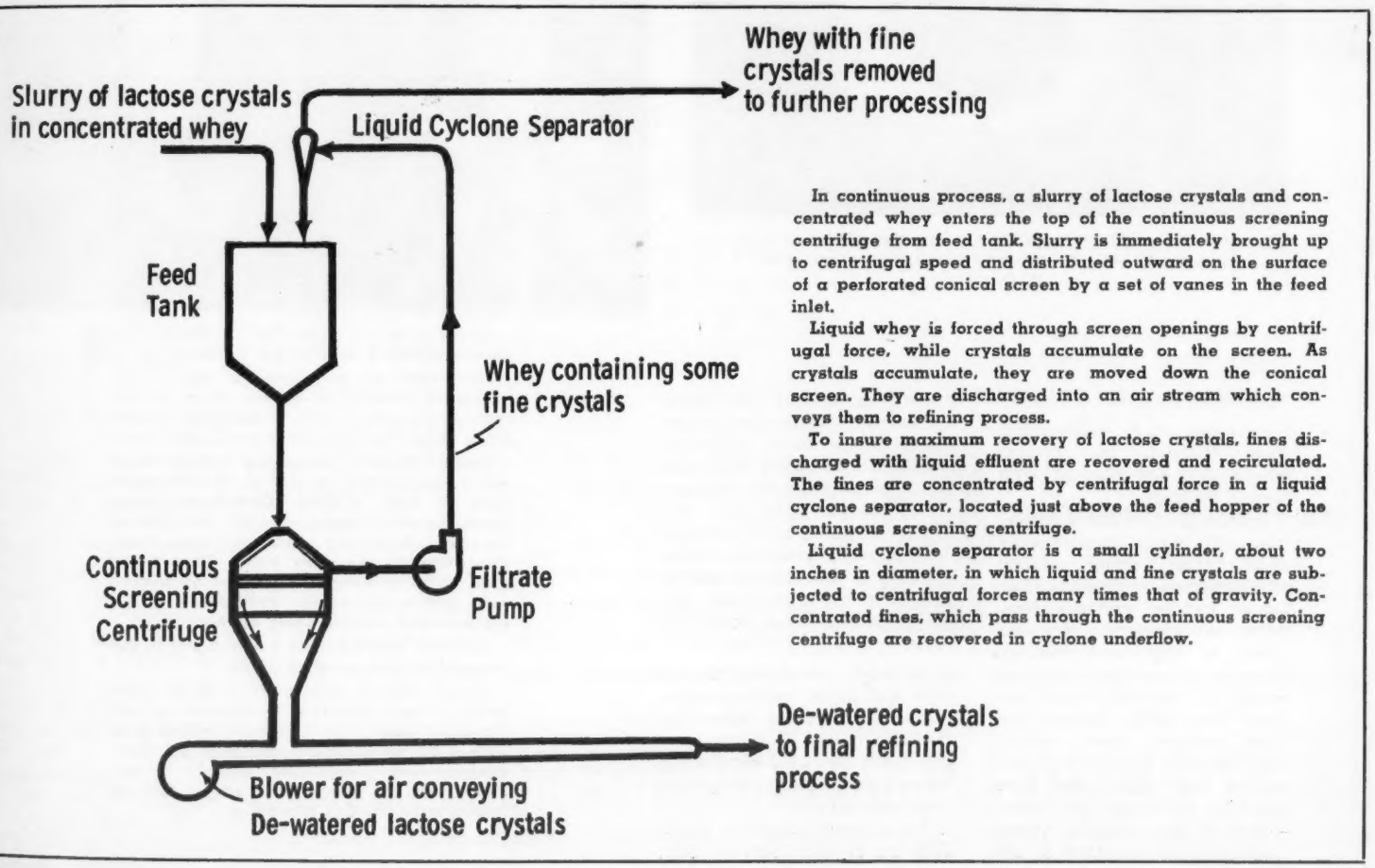
FP Staff

WESTERN Condensing has improved the method of recovering lactose crystals from concentrated whey. Formerly two batch centrifuges were used in recovering crystals.

New system consists of a continuous screening centrifuge and a continuous liquid cyclone separator, as shown in diagram. Liquid cyclone separator recovers fines in liquid effluent from the screening

(*Continued on next page*)

Lactose pure milk sugar may be used in infant food formulas, powdered coffee cream, chocolate drink, buttermilk, 'diet-type' skim milks, pie crusts and fillings, frostings and a wide variety of other food products


Whey with fine crystals removed to further processing
Slurry of lactose crystals in concentrated whey
Liquid Cyclone Separator
Feed Tank
Whey containing some fine crystals
Continuous Screening Centrifuge
Filtrate Pump
De-watered crystals to final refining process
Blower for air conveying De-watered lactose crystals

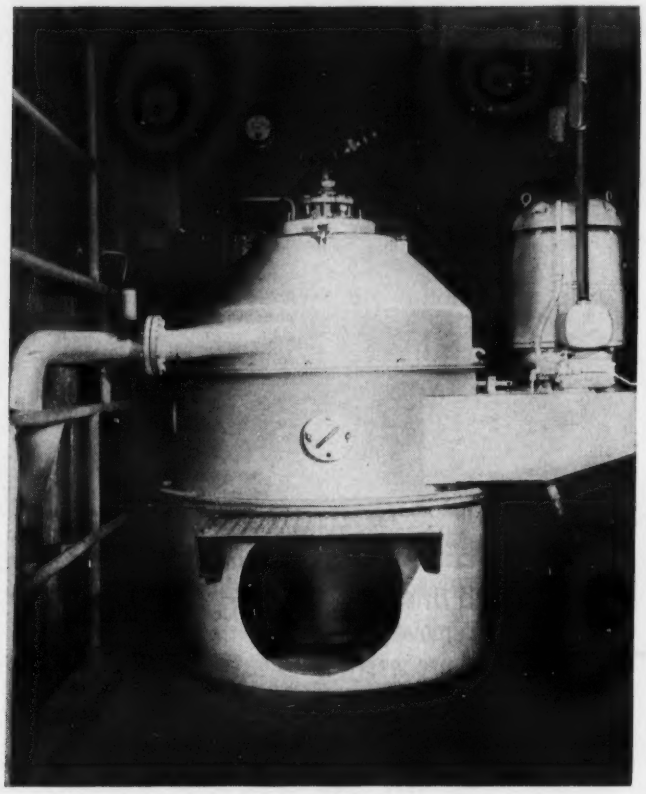
In continuous process, a slurry of lactose crystals and concentrated whey enters the top of the continuous screening centrifuge from feed tank. Slurry is immediately brought up to centrifugal speed and distributed outward on the surface of a perforated conical screen by a set of vanes in the feed inlet.

Liquid whey is forced through screen openings by centrifugal force, while crystals accumulate on the screen. As crystals accumulate, they are moved down the conical screen. They are discharged into an air stream which conveys them to refining process.

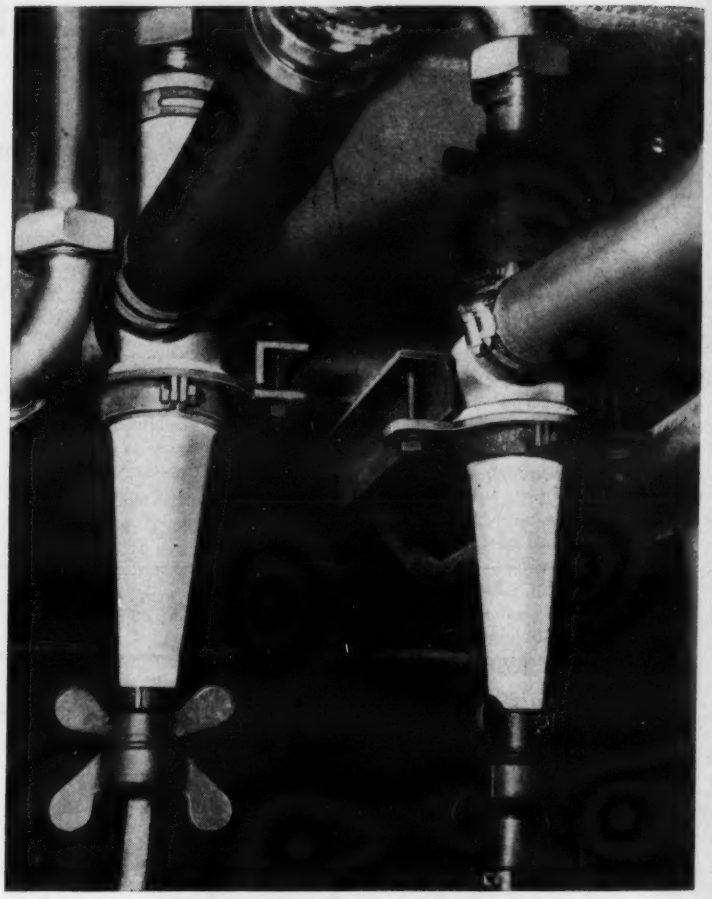
To insure maximum recovery of lactose crystals, fines discharged with liquid effluent are recovered and recirculated. The fines are concentrated by centrifugal force in a liquid cyclone separator, located just above the feed hopper of the continuous screening centrifuge.

Liquid cyclone separator is a small cylinder, about two inches in diameter, in which liquid and fine crystals are subjected to centrifugal forces many times that of gravity. Concentrated fines, which pass through the continuous screening centrifuge are recovered in cyclone underflow.

Continuous centrifuge *(Continued from preceding page)*



Continuous screening centrifuge used at Western Condensing to separate lactose crystals from concentrated whey slurry



Above view shows two liquid cyclone separators installed at Western Condensing.

These units are quite small in size, having an inside diameter of 50 mm. They are essentially classifiers with separations taking place under the influence of centrifugal force.

Liquid effluent, containing crystal fines, enters tangentially at top of cyclone separator at high velocity. Centrifugal forces throw the fine crystals against the walls of the cone where they collect and pass downward through the apex valve. Diameter of apex valve opening is controlled by winged nuts and regulates the consistency of the concentrated crystals being discharged.

Clarified liquid passes upward and is discharged through overflow at top.

Liquid cyclone separators separate fines down to approximately 15 microns in size. Capacity varies from 7.5 gpm at a feed pressure of 7.5 psi up to 30 gpm at 80 psi. Cone shaped units, constructed entirely of porcelain with no sharp inner edges, will not impart taste or odors to product.

(Continued from preceding page)

centrifuge and recirculates them through the system where they are trapped with larger crystals.

System accomplishes operation with much greater efficiency than former method while increasing capacity. Because lactose crystals produced are extremely dry and clean in this new method, quantity of refining chemicals needed to convert crude lactose into edible lactose has been reduced. Also, centrifuge-cyclone combination occupies only half the floor space of previous installation.

Except for periodic visual inspection of machines to see that operation and lubrication are normal, continuous system requires operator's attention only when changing from one batch of product to another.

Continuous operation reduces fluctuations in product flow, thereby reducing strain on crystal conveying system which, in turn, increases capacity and reduces operating costs.

(Continuous screening centrifuge and liquid cyclone separator — Mercone Screening Centrifuge and DorrClone — are products of Dorr-Oliver Incorporated, Stamford, Connecticut.)

For more information circle 5026 on Reader Service Slip.

20 minutes for uniform thawing of frozen fish blocks

British solve dielectric-heating problem

Efficient means of thawing frozen fish blocks has long been a problem to processors. Fish are frozen into blocks in times of glut or when they "run."

Present method of air-thawing results in outside of blocks attaining ambient room temperature relatively quickly while center may take up to 24 hours.

Water spraying, at best, has been of little help. Attempts to apply heat externally, such as standing blocks near radiators, or even using infra-red rays only make situation worse. Heat does not penetrate and fish on surface begin to cook.

By means of dielectric heating it has been possible to add heat internally. However, methods heretofore available have not been satisfactory. Part of the block would heat up more rapidly than others.

A means of overcoming this non-uniform heating has been developed by Dr. Charles Jason, British physicist. He developed a method for passing the frozen blocks of fish, regardless of whether they are whole or fillets, on a slowly moving belt between two plates.

The two plates are "some feet apart" and charged at a high voltage at a frequency of 40,000,000 cycles per second.

Control is such that individual fish in a block may be separated while remaining partially frozen.

Machine will thaw fish in 15-20 minutes. Cost of unit for handling one ton per hour is estimated at $28,000. It occupies only a few square yards of floor space.

Process will be available for commercial exploitation after patents are granted.
(For further information write Dr. G. A. Reay, Director, Torry Research Station, Aberdeen, Scotland.)

See how PLEXIGLAS *"gives" under a blow . . . without breaking!*

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PLEXIGLAS® acrylic plastic reduces the danger of food contamination and production loss due to broken glass, when it is used as glazing for windows, partitions, skylights, and for lighting shields.

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TAPEnology streamlines bag inventories with high-speed custom labeling!

Now California's Sunsweet Growers use *one* basic pre-printed film as bag stock for a wide variety of packaged fruits. Printed "SCOTCH" Brand Cellophane Tape lets them change a pack label just by changing the tape rolls.

Basic film stock is pre-printed with brand name and slogan only; bags are individualized for each specific product with form-cut strips of the tape printed *on the adhesive side* and applied to the inside surface of the film stock. Entire operation is automatic at high speed using a custom-built applicator designed with the help of a local tape printer-converter and 3M's Customer Engineering Service.

What do you pack? Chances are, the ingenuity and technical resourcefulness used in this Sunsweet operation can also help you find a better way to package—at higher speeds and with lowered costs. Ask your regular "SCOTCH" Brand Tape Distributor, or write: 3M Co., 900 Bush Ave., St. Paul 6, Minn., Dept. IAD-109.

When tape costs so little, why take less than "SCOTCH" Brand?

"SCOTCH" is a registered trademark for the pressure-sensitive adhesive tapes of 3M Co., St. Paul 6, Minn. Export: 99 Park Ave., New York 16. Canada: London, Ontario.

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

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Handbook offers technical and economic factors to consider in . . .

Radiation Processing

Contains engineering data not available elsewhere

Technical and economic factors to consider in applying electron-beam radiation to industrial processing, including preservation of food for extended shelf-life, are covered in 32-page handbook.

Handbook contains new and useful engineering data not presently available elsewhere. Information is presented in relation to radiation producing machines now available.

Questions are answered on types and sources of radiation, developing radiation processes from research, engineering factors in design and efficiency of electron-beam utilization and use of electron accelerators and the economics of radiation processing.

Engineering factors which are important in design for processing include dose, dose rate, penetration, size and shape of product and production capacity required. Package design and conveyor arrangement for optimum use of available beam energies is also discussed.

Handbook has over 50 illustrations, tables, charts and graphs as well as mathematical formulas and worked out calculations for such variables as optimum weights and thicknesses of processed material and power requirements per pound and linear rate.

It includes an extensive bibliography on radiation sources and effects, including sterilization, food conservation and related applications. Performance ratings, facility requirements and specifications of Van de Graaff and linear accelerators for electron-beam processing are also presented.

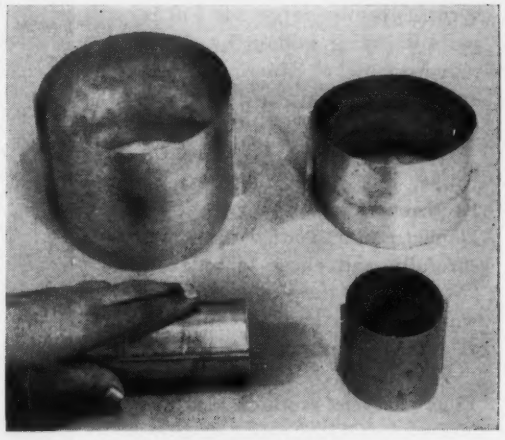
("The Handbook of High Voltage Electron-Beam Processing", Bul P, may be obtained by requesting on company letterhead from High Voltage Engineering Corporation, Burlington, Mass.)

For your copy simply circle 5029 on Reader Service Slip.

Light-wall metal tubing in ribbon form inflated at point-of-use

- **Shipped in compact rolls, cut to desired length right in field for processing or packaging applications**
- **Available in diameters smaller than a lead pencil up to a pipe large enough for a man to walk through**
- **Can be fabricated of stainless alloys in metal foil thickness up to the wall thickness of conventional pipes**

Methods and equipment to inflate thin-walled ribbon tubing will vary with application of material and its dimensions. Hydraulic pressure, air pressure and mechanical means have been used to inflate it. The thinner the wall thickness, the lower the pressure required for inflation. In some sizes, as shown in above photo, tubing can be inflated simply by using tap water pressure



Light-wall tubing may be made in sizes ranging from smaller than the lead in a pencil to a pipe large enough for a man to walk through. Shown here are 3-, 6-, and 8-inch diameter sizes that would be suitable for use as corrosion-resistant liners for ordinary steel process piping. Note the fins or ribs on the outside of the tubing. These fins provide added stiffness to the thin walled tube. If desired, the fins can be removed as the tubing is being formed

A roll of the tubing in ribbon form is particularly handy when varying lengths are needed for various jobs. Tubing can simply be cut off to desired length of strip with metal shears and then inflated for use

Experimental production of light-wall seamless metal tubing that can be shipped in ribbon form and inflated at point-of-use may provide food processors with tubing of materials and in thicknesses either unavailable today or available only at prohibitive costs.

Of particular interest to food processors is the fact that tubing may be fabricated of stainless alloys. Among numerous possible applications in the food field would be use of the tubing as a lining for low-cost construction of corrosion-resistant piping and vessels made of ordinary steel.

This would be done by inserting the deflated tubing, made of corrosion-resistant material, into an ordinary steel pipe or tank and inflating it to form an inner lining.

Tubing could be used by the canning industry. Cans made from such tubing would be seamless. In addition, the fact that it comes in a continuous ribbon makes it ideal for continuous canning lines.

In metal foil thickness, the tubing may have application as a packaging material for frozen foods or as a covering for reheating foods. A whole chicken could be inserted into a length of tubing and the ends crimped to easily form a package.

Tubing should provide substantial savings in shipping, storing and handling. Shipped in compact rolls or reels, it can be used right on the line by simply unreeling a required length, cutting it off and inflating it.

Tubing can be made as thin walled as household metal foil to as thick walled as conventional pipe. It will be possible to ship tubing in coil length of as much as 15,000 feet.

(Strubing, light-wall seamless metal tubing that can be shipped in ribbon form and inflated at point-of-use, is a development of Wolverine Tube, Division of Calumet & Hecla, Inc., 17200 Southfield Rd., Allen Park, Mich.)

For more information circle 5030 on Reader Service Slip.

ACCURATE FILL!

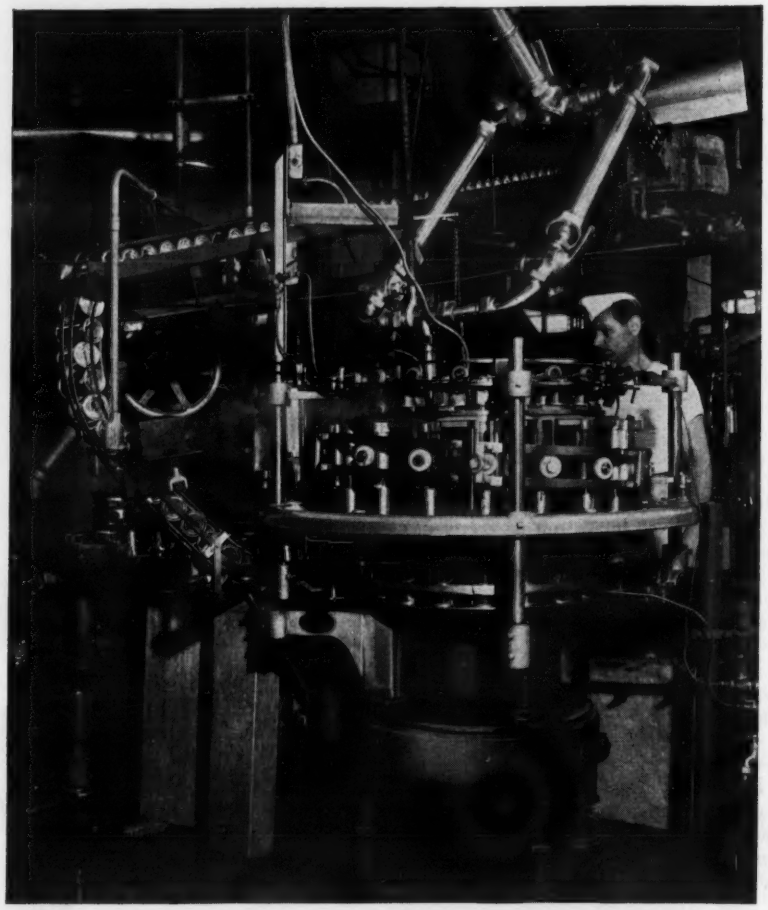
Hershey packs chocolate syrup with a Votator® FILLER

TO HELP adhere to its strict standards of plant cleanliness and efficiency, Hershey Chocolate Corporation recently selected a VOTATOR* Piston Type Filler for packaging of chocolate syrup. Results reported: Fill is more uniform; spillage has been reduced; higher standards and speeds are maintained on a continuous filling schedule.

In deciding on the VOTATOR Filler, Hershey's Laboratory, Engineering and Production Departments studied all types carefully and chose it because, "We thought the VOTATOR Filler would do the best job for us." It is now doing just that.

Why not investigate VOTATOR Fillers for *your* product. See how it can boost filling speed, improve accuracy of fill, reduce spillage. A FULL PRODUCTION RANGE, 6 THROUGH 36 STATIONS. Write for Bulletin PED 260.

VOTATOR—Reg. U. S. Pat. Off.



Hershey packs chocolate syrup in 16-ounce cans at a rate of 300 cpm—18,000 cph with this 18-station VOTATOR *Piston Type Filler.*

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Fats crisis

(*Continued from page 24*)

ly, filled milk, except that intended for formula feeding of babies, was outlawed from interstate commerce by Congress in 1923.)

Very definitely, coconut oil, which is widely used in filled milk because of its stability is not sufficiently rich in the essential fatty acids to qualify for this purpose.

How various food fats and oils compare in this respect is shown in the following table:

Grams fat or oil required to supply 100 grams of essential fatty acid*	
Safflower	135
Soybean	175
Corn	180
Cottonseed	240
Peanut	450
Lard	780
Olive	1420
Butter	2000
Beef Tallow	4000
Coconut	4000

*In this table the essential fatty acids are considered to be the polyunsaturated fatty acids linoleic, linolenic, and arachidonic. (Data from "Fats-in-Foods Front. . . Newest Breakthrough," FOOD PROCESSING, April, 1958, with data for corn oil corrected to correspond to modern hybrid corn.)

Heated fats under scrutiny

Some laboratory studies have shown that under extreme conditions, heated fats, especially the non-hydrogenated vegetable oils, undergo changes into toxic products.

These laboratory conditions, however, are not encountered in the processing of fats nor in commercial frying.

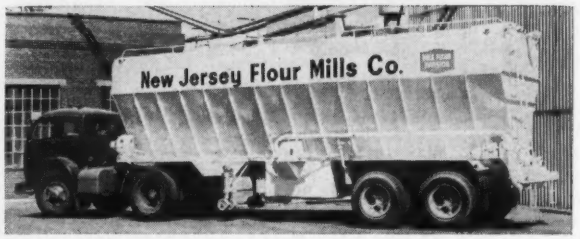
Comprehensive studies of commercial frying operations demonstrate that the heated frying oils absorbed by foods are as wholesome and nutritious as the fresh unheated oils.

A practice that must be viewed with some suspicion, however, is the heating of fats in a deep-fat fryer for extended periods of time in the absence of foods, such as occurs in roadside eating places.

The FDA is aware of these problems and is presently conducting investigations.

Further developments on this or other aspects of food fats which are of significance to the food industry will be reported in future issues of FOOD PROCESSING. END

Conveying Flour by Air



Bulk trucks for flour are equipped with pneumatic unloading system

Conclusion of last month's article by John Fischer, Chief Product Engineer Materials Handling Division, Sprout, Waldron and Company, Inc.

Usually the maximum temperature change of flour in an outside storage or transport bin, even under adverse conditions, is limited to a layer of one foot from the surface.

As a safety factor, devices for bringing the flour to a temperature between 70 and 75 F are often included in the conveying system.

Heating coils, using steam, gas, or electric heating units, are placed in the connecting line between the blower and the flour pick-up point, with regulation being provided by thermostats in the flour conveying line.

Also used are jacketed screw conveyors and jacketed horizontal mixers, designed to maintain the flour in contact with a warm surface for a predetermined period of time, thus bringing it up to the desired temperature before conveying it to the mixer.

Controlling condensation

One of the big problems in outdoor storage has been the problem of moisture condensation on inner walls of bins or tanks.

Periodic circulation of ambient air through the air space above the flour bin, by means of a circulating fan, is the answer.

This change of air does not cause the flour to dry out, but does eliminate condensation within the tanks or bins. Warm air should not ordinarily be used. Unless its humidity is controlled its use may add to the condensation problem.

RR bulk shipment

Bulk shipments of flour are usually made in completely enclosed railroad cars, specially designed with aeration discharge units built into the hoppers.

Known as "airslide" cars, they have been developed to a high point of perfection by their manufacturer, and are completely coated inside with a hard plastic coating, for maximum sanitation and minimum contamination.

Working in close collaboration with the producing mills, the car manufacturer has worked out the most satisfactory procedures for filling and venting, to eliminate condensation and cleaning problems.

This type of car is so effective and convenient, that its use for bulk rail shipment of flour is almost universal.

It should be noted here, however, that the consignee must furnish equipment to supply activating air to the car. This activating air is necessary to facilitate the discharge of the flour.

Several car unloading devices are available. One consists of two blow-through feeders in series arranged for placement under the car hoppers. Where pits or car trestles are convenient or available, cars can be discharged into a hopper over the airlock or blow-through feeder, which is located in the pit or underneath the trestle. Connection to the car hopper is usually made by means of canvas stockings.

Other car unloading devices are screw conveyors, at the end of which an airlock or blow-through airlock is secured, and aerated-pad gravity feeders.

Truck bulk shipment

When rail facilities are not conveniently located with respect to the bakery, delivery in bulk can be made by truck.

Bulk flour trucks are constructed in several different sizes, and with a variety of discharging devices.

The discharge arrangements can consist of screws extending along the bottom of the hopper body, aerating devices, or hydraulic lift arrangement which elevates the hopper to a point where the bulk material will slide into the discharge opening.

Nearly all units utilize a positive pressure pneumatic system for transferring the flour from the truck to its storage point, and a feature of most trucks is the self contained pneumatic system.

This, in turn, can be operated either by a power takeoff from the truck engine, or by a separate electric motor which is plugged into a power source at the consignee's plant.

Where the mill is located within reasonable distance of the bakery, direct delivery can be made.

However, the most significant development in the use of trucks has been for transferring from bulk railroad cars to inplant facilities where rail sidings are not conveniently located, and also in hauling from bulk stations to the consumer's point of use.

In recent years a number of bulk stations have been set up by the larger mills, so that the advantages of bulk handling can be made available to moderate and small-size bakeries located in areas where few, if any, major mills operate.

Checklist

Experienced advice is highly desirable in examining and surveying the technical side. Pneumatic conveying is still more an art than a science and has not been completely reduced to a cut and dried assembly of formulas. Special situations do exist, which make mechanical systems eminently worthy of careful consideration. The possible existence of such situations is usually sufficient justification for consulting a materials handling expert. The following points should be checked with an expert in pneumatic conveying before proceeding with final plans.

1. Amount of storage desired. The baker should evaluate with his supplier or suppliers the availability of his required product in bulk, the most convenient shipping schedule, and the possibility of transit delays. This will enable a more accurate determination of reserve capacity needed and desired. Usually, from 50 to 100,000 pounds reserve is adequate for the bakery using a carload a week.

2. Number of types of flour to be purchased in bulk. If blending is done at the bakery rather than at the mill, this must also be given consideration.

3. Layout will approximate elevations, and possible location of storage units. Sketches of this nature will save valuable time in preliminary discussions and very frequently enable alternate arrangements of greater economy to be proposed.

4. Transfer rates from shipment to storage. Depending on the location of the siding and the piping arrangement, a carload of flour can be unloaded to storage in an hour and a half to five hours. Local consideration may make it necessary to unload the car in less than four hours, or may enable as much as seven or eight hours to be used.

5. Transfer rates from storage to inplant use vary greatly also. The use of a carload of flour per week would ordinarily work out to 20,000 pounds per day. An infinite variety of arrangements are possible, in which the material may be transferred to inplant use bins at the rate of 3000 or 4000 pounds per hour, or directly to the point of use at the rate of 200 to 300 pounds per minute. It is even possible to establish a schedule, by means of which the pneumatic system used for unloading the bulk flour can be used for inplant transfer.

6. Layout of conveying line. The most important single factor in the determination of size and power requirements for a conveying system are the number of bends in the conveying line. These should be held to a minimum consistent with flexibility and good practice, because indiscriminate layout will result in a disproportionate consumption of power by the conveying equipment. The effect of the number of bends has been shown previously.

While one of the features of a pneumatic conveying system is the overall distance which can be spanned by it, distance also involves power consumption. This factor has also been shown previously.

7. Electrical considerations. In this connection, it should be noted that panel boards and control panels designed to conform with NEMA 12 conditions of the NEMA code cost approximately one-half as much as those designed to be gas-tight or explosion-proof. The difference in cost between explosion-proof motors and totally enclosed motors is not nearly so great. With this in mind, it is sometimes possible for the baker evaluating his project to provide a location for the control panel which will enable the less expensive NEMA 12 design to be unconditionally approved by his insurance carrier. END

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...puts the "YUM" in your product!

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• Use Flavorex Rum Flavor in *baked goods, confections, puddings, eggnog mixes, ice cream,* and other foods. You'll be doubly rewarded these ways . . . perfect for your present formulas . . . helps earn consumers' preference for your product.

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Critical reviews on food research—No. VIII

Reviews included in this latest volume in series on food research deal with functional aspects of rheology (flow of plastic solids such as foods), blanching, fermentation and biochemistry. Commodity areas covered include cereal grains, cacao and apples and pears.

Book is divided into six specific sections: rheology in food research; the blanching process; new methods of detecting and eliminating insect-infested grain; inorganic constituents of wine fermentation; drying and storage of cacao beans and some aspects of the biochemistry of apples and pears.

Scientific text is illustrated with drawings and graphs and considerable data are presented in numerous tables.

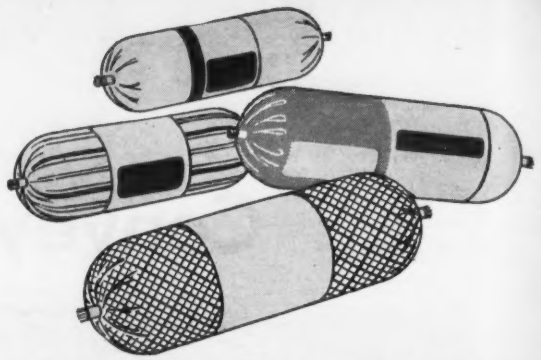
Each section ends with an extensive reference list and end of book has author and subject indexes.

Edited by E. M. Mrak and G. F. Stewart, text extensively covers both functional and commodity areas of food research.

This series of article reviews, now numbering eight volumes, gathers together the important research literature on food technology progress.

("Advances in Food Research," Vol VIII, 437 pp, is available for $12.00 from Academic Press, Inc., 111 Fifth Ave., New York 3, N.Y.)

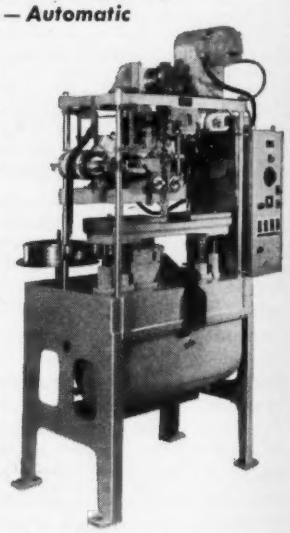
"How did the argument start?"



YOUR PRODUCT SELLS FASTER IN "CHUB" PACKAGE

Kartridg-Pak's automatic machine makes complete Chub packages in sizes from 4 to 16 oz.

Forms, fills, and closes 1800 packages per hour Continuous — Automatic



Makes a uniform, attractive package which means more impulse sales—more repeat sales for your product. And it's a convenient package for consumers to use. Gives added protection to your product.

Forms the package from flat roll stock thermoplastic film—saran, polyethylene, and others. Machine automatically closes package ends with wire clips made from roll stock wire.

Printed or plain film can be used. Package identification can be made by use of printed film, or by attaching attractive band labels.

Less total film and less labor are required with this automatic machine which means lower production costs. Flat film results in reduced film costs. Only one operator needed.

Machine accurately meters a semi-viscous product to control weight.

Floor space is saved. Machine is compact. Size 4 ft. wide x 3 ft. deep x 7 ft. high.

Low upkeep and maintenance are assured by the experience of present users.

For further details see Kartridg-Pak Representative

Kartridg-Pak Machine Co.

1241 NORTH SEDGWICK STREET, CHICAGO, ILLINOIS

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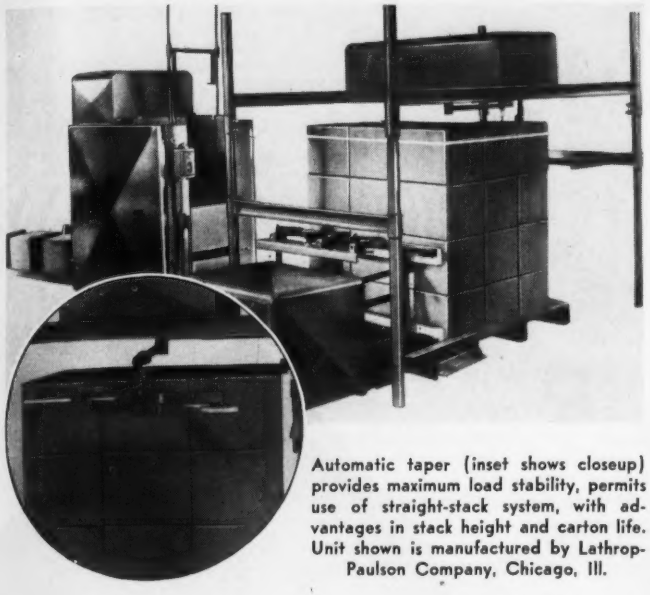
Make the most (Continued from page 26)



Automatic taper (inset shows closeup) provides maximum load stability, permits use of straight-stack system, with advantages in stack height and carton life. Unit shown is manufactured by Lathrop-Paulson Company, Chicago, Ill.

Low-cost palletizing

Important "by-product" of the concept discussed here is that by eliminating need for tying in a pallet load with a brick or pinwheel pattern, and going to the straight block pattern, we can purchase automatic pallet loaders within a price range of $5000 to $7000.

Low initial cost — less than one-half that of cross-stacking automatic pallet loaders available today—results from simpler design, since there is no need for machine to calculate load pattern or set-up.

Included in this low-cost development is an automatic taper, which costs another $2000. By taping the top layer of cartons, the unit provides the block pattern load with the needed stability for handling and high stacking.

Distinct advantages of such a unit — aside from cost — immediately obvious are:

1) eliminates intricate cross-stacking machinery and the heavy maintenance this equipment requires;

2) simplifies counting;

3) eliminates center-roll pilferage — now becoming a real problem in cross-country shipment of unit loads;

4) makes it possible to palletize more than one size of product using the same machine;

5) permits mechanization of **each** product line, as relatively lower cost allows purchase of more palletizers;

6) eliminates need to hand-stack on pallets where the quantity of cartons does not warrant paying for a $16,000 to $50,000 machine.

It is hoped that extension of the methods outlined in this article will lead to new and better means not only of getting more out of available warehouse space, but also of stimulating more efficient ways to load highway vehicles and freight cars. END

Eliminate warehousing (Continued from page 27)

comprise 90 per cent of the high priced, high profit specialties in all categories — which hitherto have been wholesale purchased in small quantities and therefore without discounting.

Volume-wise, they may represent less than 25 per cent of a warehouse inventory despite their preponderance in numbers. Most of them are imperishable. Most will turn two to six times yearly. Many might earn a two per cent

(Continued on next page)

NEW 2" TO 3 3/8" CENTER
HYGRADE WORM GEAR SPEED REDUCERS
1/3 TO 5 HORSEPOWER INPUT

Plus Features for Plus Service
• Strong, tough cast iron housings insure exact and permanent gear alignment, rigid bearing support.
• Wide-faced worm gear, made of virgin alloy bronze, on a forged steel gear shaft.
• Alloy steel worm and shaft . . . carburized, hardened and ground.
• Extra capacity ball radial and thrust bearings on worm shaft; tapered roller bearings on worm gear shaft.
• Improved neoprene spring backed lip seals on shafts.
OIL LEVEL
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Now—Foote Bros. offers the longer service life, greater capacity-for-size, more compact design and extra quality of famous Hygrade Reducers in 96 new combinations.

Advanced worm gear design and Foote Bros. precision production techniques make these new Hygrade Reducers the most efficient and economical power packages you can buy. And they're easier to select and buy, because Foote Bros. Distributors and Branch Warehouses carry them in stock ready for immediate delivery.

IN STOCK at Your Nearby FOOTE BROS. Authorized Distributor
Write for Stock Products Catalog

100 YEARS 1859-1959 FOOTE BROS.
Better Power Transmission Through Better Gears
FOOTE BROS. GEAR AND MACHINE CORPORATION
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(*Continued from preceding page*)

quantity discount on a fifty dollar order.

Labor-wise, the standard system in the retailer's warehouse would not change appreciably.

Out-of-stock condition would be prevented under manual accounting by "fencing" off an amount of stock equivalent to total ordering and delivery lead time. Not until the empty space reaches the "fence" need the purchasing department be notified.

Under electronic data processing method, a "reorder" signal card appears at the proper time in the "tub" file.

This can be done for the complete list of 3400 ("C") items in a streamlined warehouse of possibly only half the size of current warehouses required to handle such an assortment.

How retailers benefit

Retailers, however, may not like drop shipments—but this is largely because drops are not now delivered on a scheduled basis.

If deliveries can be scheduled, a retailer may be able to plan his receiving program so as to maintain high productivity of store personnel, with which drop shipments now interfere.*

In fact, if receiving is done at night, pallet loads may be delivered direct to display racks, and the need for present-day back room or basement warehouses is largely eliminated. So, why shouldn't the retailer cooperate?

Manufacturers' viewpoint

Receipt of orders weeks or months in advance would be something new for many grocery product manufacturers.

Even though, under the proposed system, as much as 10 per cent of the deliveries may

*Delivery schedules for individual stores are not difficult if the basic data are already prepared. However, determination of economical quantity per order, cost of an order, the normal inventory cost as a per cent of selling margin and cost of carrying greater inventory vs. cost of increasing the number of purchase orders must be done for each store.

However, these are refinements which may be needed to achieve the last ounce of efficiency from the system, rather than being basic to its success.

basic source for CITRIC ACID, U.S.P.

Here is an unusually pure citric acid produced in the Midwest by Miles Chemical Company's unique deep fermentation process. Ready for immediate shipment in truck-load quantities.

For years Miles has produced a considerable volume of citric acid mainly for its own use in pharmaceuticals. A unique deep fermentation process, pioneered by Miles, yields a product remarkably free from contamination and meets Miles' most strict purity and mesh specifications.

This deep fermentation capacity has been expanded to provide a reliable, large volume supply of citric acid U.S.P. for the open market. It's ready for shipment when and where you need it. Our plant is centrally located . . . a convenient producing point with excellent transportation routes in all directions.

Write for full details. A Miles Chemical representative will be happy to discuss your requirements at your request.

Miles Chemical Company

division of Miles Laboratories, Inc.
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involve sizeable last-minute adjustments, manufacturers' production schedules for drop shipment customers can greatly lower costs of raw materials and supplies inventories, and consequent capital investment in these and in warehousing facilities no longer needed for most such products — either raw or in finished state.

Investment in automatic lines for continuous case packing, case sealing, unitizing (pallet loading, weighing and stenciling) should amount to only a small part of investment costs saved, and be amortized in a few weeks.

The need for several lines to unitize into 6, 8, 12, 24 and 48 case units on various-size pallets applies only to the volume items in Class A. All Class B items would probably and on standard 40 by 48 pallets.

The average size of shipping unit for "C" items would likely need a pallet size under the 48 by 40 size now widely used in the industry — although many items may justify the 48 by 40 pallet.

Effect on pallet sizes

It is obvious to most observers that the larger-size pallets are most suitable for high stacking in warehouses. The ability of the 48 by 40 pallet to handle almost twice the maximum load of the 40 by 32 pallet, with the same labor and equipment costs, makes the small pallet look uneconomical.

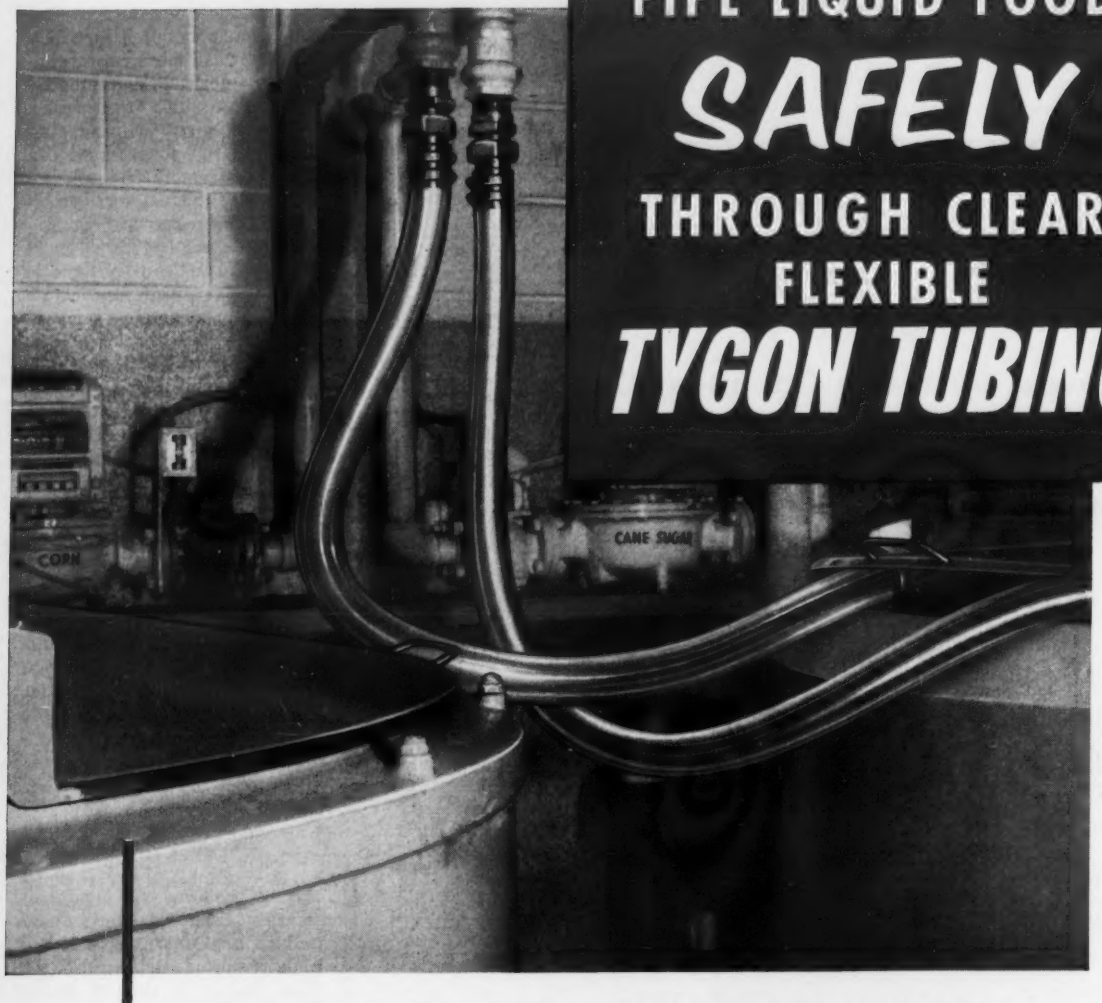
Yet the small pallet proves *more* economical than larger sizes when it eliminates warehousing entirely for many volume items and makes possible direct manufacturer-to-purchaser shipments.

A range of "small" pallet sizes is, of course, needed to satisfy the differing needs of both the small retailer and the large supermarket. The smaller the pallet, the larger the number of direct shipments to retailers that become possible.

From the retail handling standpoint — space being at the greatest premium — the

(*Continued from preceding page*)

PIPE LIQUID FOODS SAFELY THROUGH CLEAR, FLEXIBLE TYGON TUBING



Less expensive than stainless steel, Tygon flexible-plastic Tubing combines the best features of both rubber and glass, without the disadvantages of either. It is the ideal piping medium for handling liquid food products.

Tygon Tubing gives you the solution visibility of clear glass, without the danger of breaking. It gives you the flexibility of rubber without the danger of contamination. Light in weight, strong, abrasion resistant, Tygon Tubing can go from "anywhere to anywhere" with fewer fittings, less assembly time.

A Tygon line can be dismantled, cleaned and re-assembled quickly. Tygon can be steam sterilized, or chemically cleaned.

Tygon is a registered Trade Mark of The U. S. Stoneware Co.

Tygon Tubing comes in continuous lengths, and in bore sizes from ⅛" to 3". For full technical data write for Bulletin T-97.

177-F

U. S. STONEWARE
AKRON 9, OHIO

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Eliminate warehousing

(*Continued from preceding page*)

shorter the pallet stringers the narrower can be the retail storage aisles.

Roughly, a maximum of a 32 or possibly a 36 in. stringer might be preferable to a 40-in. pallet for use on all items that can be delivered directly to the retail display area in unitized loads, or alternately stored in the back room.

This would apply to all the "A" items, which include the aforementioned major soaps, powders, canned foods, sugar, paper products, mixes, etc.

Of the ASA Standard sizes, 32 by 24 and 36 by 36 might be preferred to 40 by 32, 42 by 36, 48 by 32, and 48 by 36.** However, if the lengths and widths of the latter four items are reversed, or if four-way pallets are used, they might be more satisfactory for direct delivery purposes.

Although the majority of "B" items might be handled on 48 by 40 pallets, most "C" items might more economically be handled on smaller pallets in the average purchase lot.

In a recent study of an existing grocery warehouse of a supermarket chain, it was determined that a 36 by 36 four-way pallet would accommodate the maximum number of products in pallet loads.

Same size pallet also would fit the maximum number of truck beds in current use, would store the largest number of items for delivery to retail stores in the smallest floor area and would allow the minimum width of aisle for use of straddle or reach-type fork trucks.

Therefore, the small-size pallet, on the average, might possibly predominate in an economically designed grocery product distribution operation.

Thus, it is very unwise to freeze standards which may entirely disregard the grocery industry's future need of several sizes of pallets which are considerably smaller than those minimum sizes which may be in current use.

**The longer dimension names the length of the stringer, the depth of the pallet and the minimum aisle depth needed for storage. The shorter dimension indicates space occupied crosswise when being moved through retail store aisles. A four-way pallet allows maximum maneuvering through the narrower aisles.

Warehouse handling costs

There should be no question of the potential savings in warehouse handling costs if the 100 fastest moving items are eliminated from the central warehouse altogether, and the next fastest 400 or 500 items are handled on live racks.

This might represent 75 per cent of the sales volume and 75 per cent of the labor cost.

The warehouse productivity of touch labor is now very low indeed because high-volume items require so much rehandling and walking, both in-bound and out-bound.

The national average productivity appears to be about 1¼ tons per man hr., with 2¾ tons as maximum.

In the sample grocery warehouse operation cited, the productivity rose to 3½ to 4 tons per man hr without eliminating any items from the warehouse, as would be the case with the ABC System.

Therefore, assuming a possible reduction of 50 per cent increase in inventory handling under the ABC System, productivity should rise to seven to eight tons per man hr compared to the national 1¼ tons per man hr average figure for the over-all wholesale operation.

Finally, warehousing costs being fairly constant for the country's larger cities, the national average of $1.15 per slot per month is applicable.

For a 5000-item assortment, this is a cost of $5700 per month. Since many items are purchased in 1000 case lots or greater to get the quantity discount, these items occupy 20 or more slots each.***

Therefore, it is 20 times more important to eliminate these "A" items than the "C"

***Facile analysis of individual store data requires previous experience of the organization with electronic data processing and complete sales records by stores — either on punched cards or tape. Otherwise, the classification into "A", "B" and "C" items would be a stupendous task, because the old slot system must simultaneously be modified.

If the slot system previously was organized according to volume of sales, item by item, then it is ideal for classifying the individual items. The product classification codes in which all canned goods are classified together regardless of sales volume is more than useless. It must be recoded in its entirety.

(*Continued on page 76*)

Remarkable dispenser assures pin-point accuracy!

New Flocron eliminates costly ingredient loss!

Canners, packers and food processors now using the new Flocron liquid dispenser report ingredient savings up to $1,000 per line. These savings are possible because the Flocron avoids waste inherent in "overflow fill" systems, stops "splash loss" and handles costly ingredients with money-saving speed and accuracy.

The remarkable Flocron is actually a precise electronic system with photoelectric circuits in a sealed unit and a new lever-type photo switch to activate dispensing. It assures high speed accuracy—even on lines handling up to 300 units per minute! Remote electronic controls permit you to "dial" the exact amount of liquid required for various can sizes: Brine . . . hot butter . . . Monosodium Glutamate . . . concentrated syrup . . . ascorbic acid . . . brine and sugar . . . spice oils . . . coloring . . . oil . . . chicken fat . . . flavors . . . medicinal liquids.

Designed for efficient, low cost operation. The Flocron is made of stainless steel and plastic and is constructed to avoid corrosion and lengthy breakdowns that result in costly downtime. There are no valves to stick or clog. The Flocron is easily cleaned by merely flushing the fluid system.

No need to revise production lines. The Flocron can be operated with existing equipment. Scientific Dispensing Company technicians are available in all areas to assist with installation and service problems.

The Flocron liquid dispenser is offered only by the Scientific Dispensing Division of the Morton Salt Company.

Mail coupon today for more information

Name_____
(please print)

Title_____

Company_____

Address_____

City_____ Zone____ State_____

Scientific Dispensing Company, Division of

MORTON SALT COMPANY

Dept. FP10, 110 No. Wacker Drive, Chicago 6, Illinois

5037 on Reader Service Slip.

SPOTLIGHTING MATERIAL HANDLING

HIGHLIGHTS

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Prof. G. A. Fitzgerald

Why 'Fluidized' Conveying? General Mills Has Answer 31

Rapid, almost constant expansion in the food processing industry boosts need for industrial trucks and other equipment.

Big question — should a food processor

Lease, rent

FP Staff Report*

The answer depends, first of all, on the elapsed time of use anticipated for the equipment. Beyond this, an analysis involving the various considerations below helps in deciding whether one should rent, lease or buy.

One of the three alternatives usually can be eliminated at the outset by inspecting the problem — bringing the choice down to one of two alternatives.

Short term — rental vs. purchase

While the economics of the short-term use are important in decisions to rent (see box), more often the key considerations are flexibility, speed and absence of complicated, laborious record keeping.

Rental may be best in instances where:

Fast-changing technology, either in the equipment required or in the handling system itself, makes it desirable to avoid long-term commitment. Rental will provide use of the equipment, such as a special lift truck, until the newer model comes along, or until long-range needs are better known.

Relief from project preparation is important. Documents must be prepared and approved before commitment to expend capital funds can be made. Also, equipment suddenly needed but not included in a forecast can be taken care of faster on a rental basis.

Bookkeeping and tax considerations are major physical problems. Much work and cost are involved in setting up assets on the books, maintaining depreciation records, determining appropriate depreciation charges, periodically inventorying to check existence of the asset and reporting value of assets for tax and earnings reports.

Ease of acquisition and disposal is especially attractive. Renting offers advantages for installations where early start-up is imperative to maintain a temporary competitive position, get a real head-start on the market or provide additional customer service.

Equipment owner provides service and maintenance, freeing regular company personnel for their primary profit-making operations. On a rental venture, the equipment owner will often, if desired, take full responsibility for maintenance and upkeep.

Long term — lease vs. purchase

Several major points favor use of lease contracts for the longer-range application:

Conservation of working capital. This is perhaps the most important single reason for turning to leasing, and may be motivated by lack of funds, overdrawing of credit or simply unwillingness to dilute ownership in the business.

However, even when working capital is plentiful, it is possible that it might be invested elsewhere to better advantage — in inventory, a new plant, an advertising or sales promotion campaign or in some other type of equipment.

Protection of return on investment. Some companies have required rates of return on their capital investment substantially higher than the cost involved in borrowing money.

In such cases, leasing of equipment from outside companies, who calculate their charges on the low rate of interest, will maintain the high rate of return on company investment.

Timing of deductions for tax purposes. Leasing is *not* a means of avoiding taxes, but does permit control of tax deduction timing — which may be turned into an advantage.

As example, in the case of an electric industrial truck leased for a three-year term, cost of lease offers a tax deduction for three years, but leaves no deduction for future years.

On the other hand, if the truck were purchased outright and written off in the normal eight years allowed for an electric truck, the buyer receives a tax deduction for an eight-year period.

Thus, it is necessary to decide which is most desirable — a relatively large tax deduction for three years, or a smaller deduction over an eight-year period. This will be determined by the profitability of the company, the savings created by the new piece of equipment, the future tax laws and other factors.

Hedge against inflation. Since leasing permits faster write-off than outright purchase, it may serve as an in-

*Based on material provided by W. H. Campbell, Treasurer, The Elwell-Parker Electric Company, Cleveland, Ohio, and R. W. Puder and W. R. Hilton, Engineering Service Division, Engineering Department, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

or purchase?

flation hedge. Money is available sooner to buy new replacement equipment before inflation has seriously affected its purchase price.

Write-offs in big profit years. If a company expects to have high earnings in the next few years, it may prove wise to lease equipment and write off its cost during the high-profit years — in a shorter period than normally allowed under existing depreciation schedules.

Miscellaneous advantages attached to leasing might include some already mentioned for rental — for example, availability of special labor or special service from the equipment owner and ease of acquisition or disposal.

Which serves purpose best?

Rental or lease arrangements are extremely useful tools for the materials handling engineer (or packaging or distribution engineer), but their intelligent use is dictated largely by the economic picture.

Factors listed above as advantages could prove serious disadvantages for particular firms at certain times. Fast tax write-off, for example, could work to a company's disadvantage if profits rise

(*Continued on next page*)

Photograph courtesy of The Elwell-Parker Electric Company

Some facts on leasing and renting

What can be leased?

Generally, any item of material handling equipment that can be purchased also can be leased. This includes even specially designed industrial trucks and special load-handling attachments.

What are usual leases?

Two basic types of lease are offered by both equipment manufacturers and professional leasing organizations:
1) Straight lease. Here, equipment is leased at a specified rate, usually payable monthly for periods of from two to six or more years. At lease termination, equipment reverts to owner. Actual title to equipment never changes hands.
2) Lease with option to buy. These lease terms include option to buy the equipment at termination of lease. Purchase price may be a dollar, or it may be at the then current fair market value. Here again, payments usually are made in regular monthly installments, and lease terms range from two to six or more years. Title remains with lessor until option is exercised.
Either type of lease may call for payments in equal monthly installments, or, it is possible to work out an accelerated payment schedule to meet needs of individual lessees.

Are all leases alike?

Generally speaking, terms of most leases are substantially the same except for variations in interest rate charged. (In all cases, the monthly payments involved total up to original price of the equipment plus interest on the principal amount involved.)
Not only does the actual percentage rate of interest vary, but method of computing total interest varies. Thus, it is necessary to make a careful investigation of terms to assure the greatest economy.

How do leasing costs compare with borrowing?

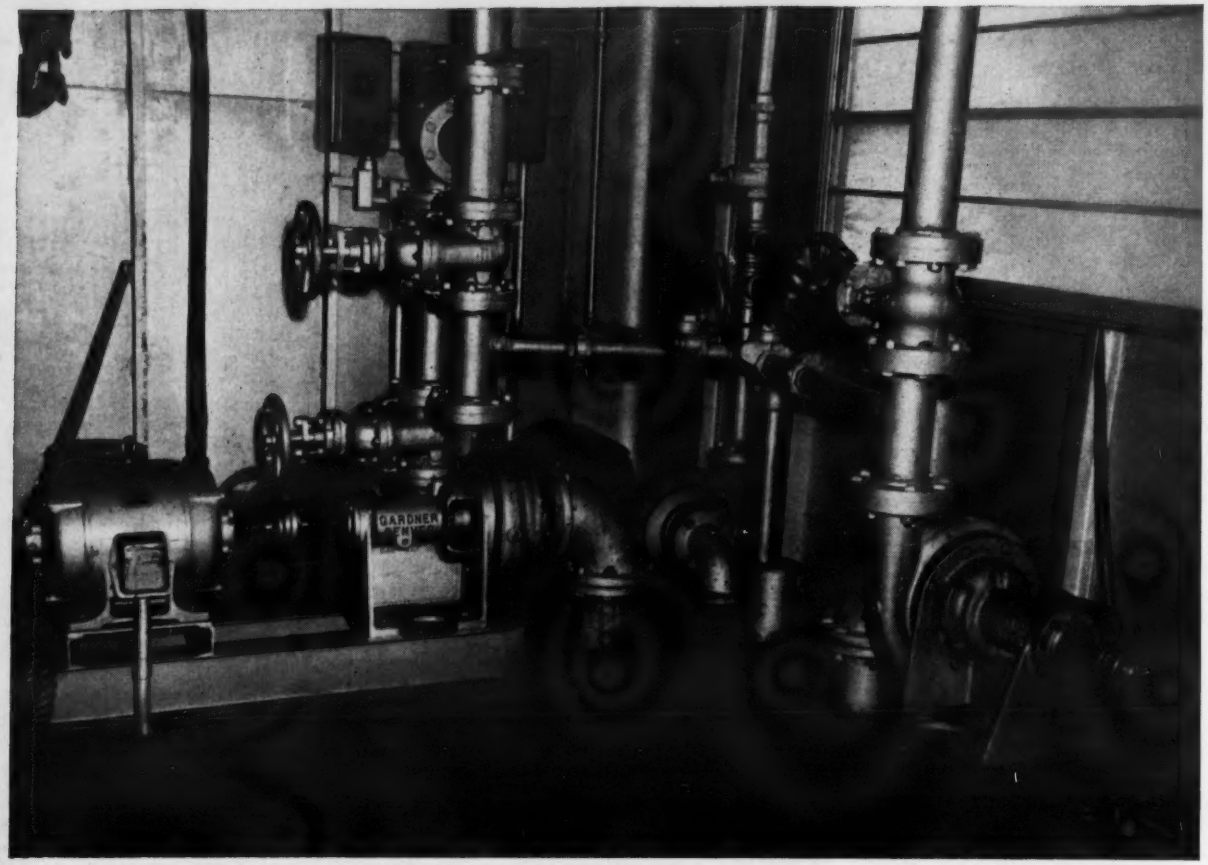
There is no great difference between borrowing at the bank to buy an industrial truck and leasing the truck.
In both cases, interest or service fees are paid. Likewise, the company requiring the truck must have about the same credit rating. And, through the options available, it is possible to eventually obtain title to a leased industrial truck, as would be the case if the truck were purchased with borrowed money.
In favor of leasing is the fact that usually no down payment is required, and, the debt financing appears on the company's Balance Sheet, while lease obligations appear only as a footnote.

How do leases differ from rentals?

As ordinarily understood, "rental" covers use of equipment or a facility for an indeterminate period, which could vary from a few days, two months or even one or two years. The period, however, bears little or no relation to the economic life of the item rented.
A lease, on the other hand, covers use for a predetermined period — which might well be 60, 80 or even 100 per cent of the estimated economic life of the item.

Why are rental charges relatively high?

Since owner must gamble on recovering his investment from a number of uses by individual renters — separated by periods of idleness of indefinite duration — rental costs will be substantially greater than unit cost derived by dividing initial equipment cost by expected life, measured in months or in productivity. Rental charges usually are expressed in terms of dollars per day or month, dollars per thousand units produced, etc.

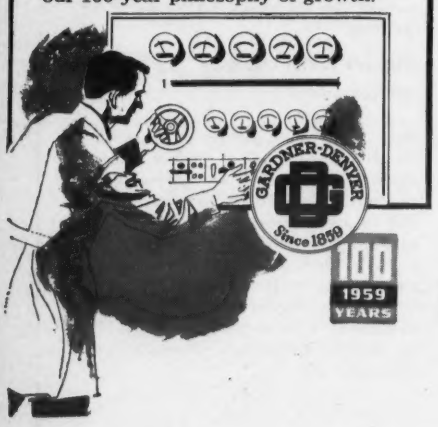


Your Gardner-Denver pump specialist has a quality pump for heads up to 300 ft.—for capacities up to 2000 g.p.m. See him soon.

All set for efficient pumping though heads may change...and volume, too

TESTING NEVER ENDS

Superior product performance is never an accident. Skilled Gardner-Denver men continually test Gardner-Denver equipment against rigid specifications to insure uniformly high quality in product after product. At Gardner-Denver *there's no substitute for men*—our 100-year philosophy of growth.



Gardner-Denver centrifugals deliver peak performance over a broad range of service conditions . . . take variations in head or volume efficiently. Available in a wide range of sizes—to handle a wider-than-usual range of capacities and pressures. Ask your Gardner-Denver pump specialist to help select the best centrifugal for your application, or write for bulletin.

- Extra large shafts to assure continual alignment.
- Heavy-duty ball bearings.
- Casing of high-strength alloy iron produces gradual velocity changes for smooth flow, better efficiency.
- Mechanical seal for long life without attention.
- Hydraulically balanced impellers.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

5038 on Reader Service Slip.

MATERIAL HANDLING

(*Continued from preceding page*)

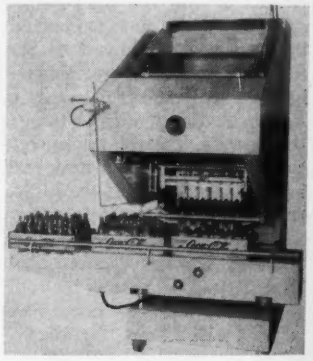
after the lease has terminated.

The pros and cons of leasing must be studied in relation to a company's financial position — by people who understand economics — either within the company itself or from among outside professionals. END

300-bottle/min uncaser also practical at 130-min

Uses: Simply designed unit uncases standard bottles from full and half depth cases, and from carry-home cartons.

Features: Basic unit handles up to 300 bottles per min, but low initial price permits economical operation on even a single 130-bottle-per-min line.



Models capable of speeds up to 600 bottles per min are available

Machine will feed all standard types of washer loaders; it can therefore easily be fitted into existing bottling lines.

Description: Right or left hand infeed can be provided as required. Infeed timing is simple; case spacing and discharge are mechanical.

Adjustment for various bottle sizes, from halfpints to quarts requires less than five min.

Floor space requirements are only 3 ft 2⅜ in. by 2 ft 10⅝ in.

(RCA Uncaser is manufactured by Radio Corporation of America, Industrial Automation Division, Bldg. 15-1, Camden, N. J.)

For more information circle 5039 on Reader Service Slip.

MATERIAL HANDLING

'CONTAINERIZED' CARGO SPEEDS SHIPMENTS TO ALASKA AND THE YUKON

Land-sea system employing sealed steel cargo containers keeps supplies flowing to expanding industrial area

THE developing industrial potential of Alaska and the Yukon Territory has accelerated demand for US-produced products. With the step-up in shipments, problems multiplied accordingly.

Losses from breakage, pilferage and temperature extremes, added to already high costs resulting from frequent handling and rehandling of individual items of cargo, convinced White Pass & Yukon Route, Vancouver, B.C., a major transport company serving this territory, that a new method of cargo handling was needed.

To meet the challenge, company put into effect a cargo-handling system based on special steel containers measuring 7 by 8 by 8 ft, with a capacity of 448 cu ft, and weighing from 2900 to 4800 lb empty.

The containers are filled and sealed by the shipper, delivered to dockside at Vancouver via flatbed truck-trailers and loaded aboard ship for the voyage to Skagway, Alaska. Here, they are placed aboard rail cars for trans-shipment to Whitehorse, Yukon Territory.

At Whitehorse, containers are delivered by truck to local consignees, or sorted for delivery to customers at other highway points.

Five types of containers are used, including special con-

(*Continued on next page*)

Fully loaded sealed containers, arriving from shipper's warehouse, are unloaded from flatbed trailer by 22,000-lb-capacity lift truck for temporary storage at dockside

MAIL THIS COUPON

Cyclone Fence, American Steel & Wire
Dept. K-1091, 614 Superior Avenue, N.W., Cleveland 13, Ohio
Please have your trained representative call on us to discuss our production problems.

Name..... Company.....
Address.....
City..... State.....

Let **Cyclone** carry your production load

Competitive market prices make production efficiency a more vital part of business success than ever before. Production waste, unnecessary manual handling, or time-consuming carting of products can add unnecessary expense to the price of your product. In many cases, a Cyclone Metal Processing Belt could help make your production line more efficient, thus making your product price more competitive.

We'd like the chance to send one of our trained salesmen into your plant to investigate your own production problems. Chances are he can show you, with facts and figures, exactly how a Cyclone Belt can be a blessing to your profit picture. His suggestions will be tailored to YOUR plant and YOUR product, not just a general sales pitch. There is absolutely *no obligation*.

USS and Cyclone are registered trademarks

Cyclone Fence Dept.
American Steel & Wire
Division of
USS United States Steel

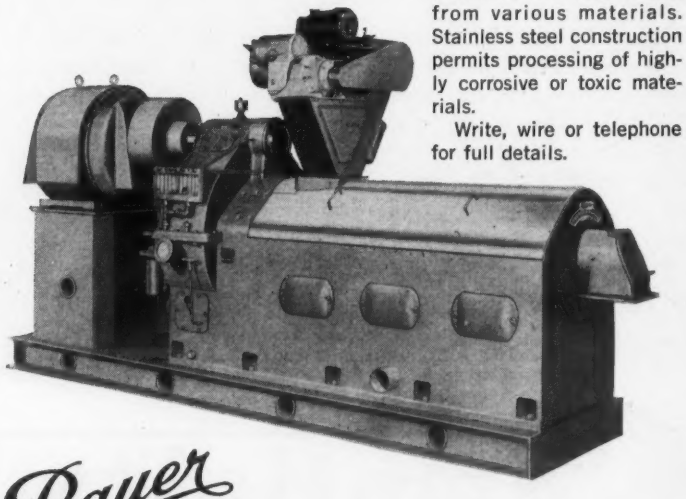
Manufactured at Waukegan, Ill. and Oakland, Calif. • Sales Offices, Coast to Coast

5040 on Reader Service Slip.

HAVE YOU A PRESSING PROBLEM?

Bauer Pressafiners are high pressure precision machines engineered specifically for the expression of moisture or other fluids from various materials. Stainless steel construction permits processing of highly corrosive or toxic materials.

Write, wire or telephone for full details.



Bauer

THE BAUER BROS. CO.
1719 SHERIDAN AVENUE • SPRINGFIELD, OHIO

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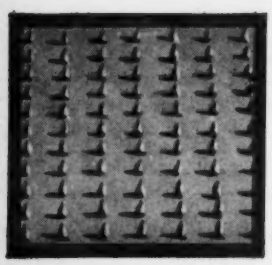
BRAND NEW FROM SIMPLICITY!

3'x3' MULTI-PURPOSE SCREEN

- pricking
- scalping
- sizing
- dewatering
- trash removal
- industrial waste removal



PRICKING PANEL INCREASES THE RATE OF BRINE OR SWEETENING PENETRATION

The Simplicity "pricking panel," shown at left, is entirely new in the industry; it provides fine mechanical perforations of fruits and vegetables and increases the rate of brine and sweetening penetration. Each and every fruit or vegetable passing over this vibrating panel receives many tiny perforations, thus enabling faster and better penetration of brine or sweetening.

The new Simplicity 3' x 3' Multi-Purpose Screen, with its complete versatility, offers the entire food industry a revolutionary way to cut food processing costs with higher production speeds, a more uniform product and greater flexibility for multi-purpose use. The Multi-Purpose Screen is adaptable to a number of operations and has been used successfully to size, prick, dewater, scalp and remove trash from a number of fruits and vegetables.

The screening section of the Simplicity Multi-Purpose Screen can be equipped with screen cloth of any specification and can be easily replaced with the new pricking panel. The machine itself can be constructed of mild or stainless steel and stainless steel wire cloth is normally used.

Simplicity offers expert counsel for food screening problems based on unequalled experience in screen applications. For more information on Simplicity food screening equipment, write Department 7, Simplicity Engineering Company, Durand, Michigan.

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND 6, MICHIGAN

SALES REPRESENTATIVES IN ALL PARTS OF THE U.S.A.

FOR CANADA: Simplicity Materials Handling Limited, Guelph, Ontario.

FOR EXPORT: Brown & Sites, 50 Church Street, New York 17, N. Y.

5042 on Reader Service Slip.

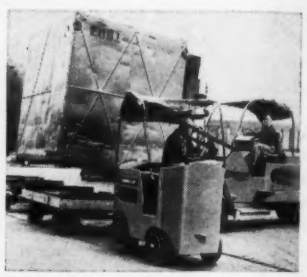
MATERIAL HANDLING

(*Continued from preceding page*)

tainers for perishables and explosives, heated containers, refrigerated containers and containers designed for freight that is not affected by temperature variations.

To enable instant identification of type of contents, containers are painted in five different colors.

Green containers have extra wide doors, are used for grain, soap, hardware, etc. Orange containers are insulated, and heated with their own preco heaters. Silver containers are refrigerated, carry their own adjustable temperature cooling units plugged into the ship's electrical system. Yellow container is for perishables, red for explosives.



Containers removed from temporary storage at dockside are loaded onto steel trailer carts for towing to shipside

Key factors in handling of the heavy, loaded containers are six 22,000-lb-capacity fork lift trucks, distributed two each in Vancouver, Skagway and Whitehorse.

Featuring seven-ft forks, a 17½-ft lifting capacity and a special side-shift attachment, these units stack, load and unload all containers — are even hoisted aboard ship to store up to 175 of the cargo containers in the hold and other storage areas.

In addition, the company also uses ten smaller, gas-operated fork lift trucks (six in Vancouver and four in Skagway) for general handling — particularly of non-palletized products.

This "door-to-door" handling has revolutionized shipments to Alaska and the Yukon. Merchandise now is delivered in five days — twice

as fast as before. Transportation and handling costs have been reduced for both shippers and the transport company.

Hoisted aboard ship, heavy-duty lift truck stacks containers in hold. Unit also lifts containers out into open space where ship's gear can hoist them from hold

Moreover, goods now are delivered safely, unspoiled and without loss.

(Gerlinger 22,000-lb-capacity fork lift trucks, Towmotor fork lift trucks and Towmotor Model K-5 industrial tractor, as used in operations of White Pass & Yukon Route, are manufactured by Towmotor Corporation, 1226 E. 152nd St., Cleveland 10, Ohio.)

For more information circle 5043 on Reader Service Slip.

Warehouse layout: narrow aisles or wide?

Eight-page brochure is a guide which gives advantages and disadvantages of both narrow and wide aisles in warehouse layout.

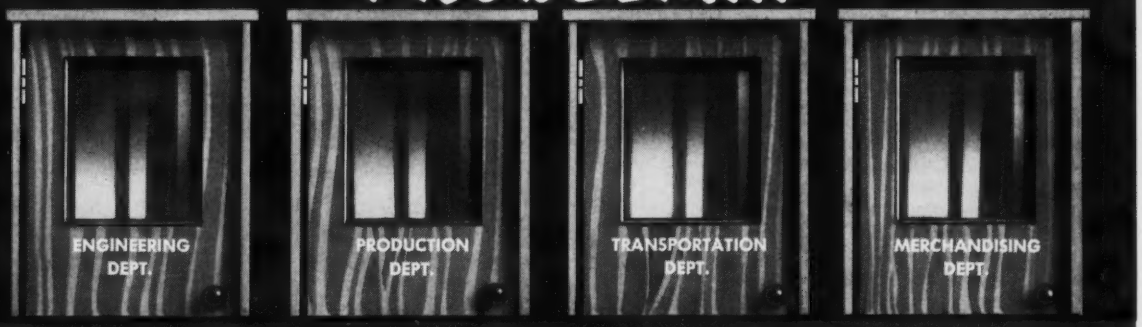
Literature has four pages of illustrations showing lift truck equipment in a variety of warehousing situations.

Additional material handling booklets are listed.

("A Study in Dimensions," is available from the Automatic Transportation Company, 149 W. 87th St., Chicago, Ill.)

For your copy simply circle 5044 on Reader Service Slip.

PRODUCT HANDLING IS THEIR PROBLEM...



and NESTAWAY has the ANSWER

. . . A SYSTEM FOR HANDLING BAKED GOODS FROM WRAPPER TO CONSUMER

ENGINEERING: The Nestaway System meets every requirement of bakery engineers for efficiency, economy, durability, and sanitation. It is an "engineered" system comprised of wire racks, rack shelves, and caster bases, which combine to form an integral unit complete for moving baked goods every step of the way from the wrapper to the consumer. When empty, the entire system nests to save over 75% in valuable floor space in the bakery. All parts are made of welded steel wire, with a copper-nickel hard chrome finish, assuring long life and easy cleaning. Complete visual control and accessibility is available through every step of your operation. Actual case histories prove the Nestaway System can be used indefinitely with a minimum of replacements. Cost figures show that carton costs alone will usually pay for the entire Nestaway System in two years.

PRODUCTION: Production problems are simplified with Nestaway, the only system versatile enough to handle all your products—even unwrapped baked goods. Racks are filled at the wrapper and stacked one upon another on caster bases. The ease with which the racks can be nested and unnested allows them to be used with the fastest automatic wrapping equipment. Interlocking features of the racks when stacked make it possible for one man to move three tiers of twelve stacked racks at one time with ease. All products are visible and accessible at all times, simplifying order makeup. Construction features prevent one rack from falling into another, eliminating damaged goods. Chrome finish used by Nestaway picks up a minimum of dirt and wax. If freezing is a part of your operation, Nestaway is ideal for the job. Open construction permits rapid freezing and defrosting, and the finish is unaffected by temperature changes.

TRANSPORTATION: Moving baked goods is faster and more efficient with Nestaway. Loading trucks and trailers with Nestaway units and transporting them direct to outlets or distribution points can be accomplished in a minimum of time. Transferring products to other containers or racks for transporting is never necessary when the Nestaway System is used. Nestaway units are "engineered" to handle your product to maximum capacity in trucks and trailers. Product sizes and varieties as well as truck and trailer sizes are vital factors. Individual units or stacks are easily tagged for quick identification at drop-off points. Visual control of products prevents costly mistakes. Interlocking stacking features prevent product damage enroute. You can haul bigger payloads with no damage to your products, and on return trips your trucks can carry three times as many empties, thanks to Nestaway's patented nesting features.

MERCHANDISING: With the Nestaway System, your products arrive at the store in perfect condition, and completely visible for your inspection and count. Stacked units can be rolled directly to island for easy and quick loading of your displays. All your products are accessible without the necessity of unstacking the racks. Volume items or special items can be displayed and merchandised direct from the Nestaway units. Sales can be increased by encouraging impulse buying when placing loaded racks as display units near related counters; such as, buns near the meat department. Chrome finish offers attractive displays, and does not detract from your store fixtures. When empty, the entire system can be nested to less than 25% of the original space, saving you valuable backroom floor space.

"Engineered Material Handling Systems"

NESTAWAY INC.

2108 PAYNE AVE., CLEVELAND 14, OHIO

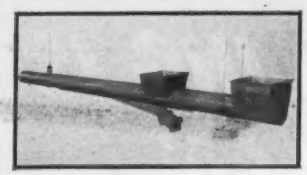
NO OTHER HANDLING SYSTEM IS SO FLEXIBLE OR SO VERSATILE AS NESTAWAY, THE ONLY COMPLETELY ENGINEERED SYSTEM THAT HANDLES BAKED GOODS EVERY STEP OF THE WAY FROM THE WRAPPER TO THE CONSUMER.

WRITE FOR FREE BROCHURE

In Canada — Nestaway Ltd., P.O. Box 289, Malton, Ontario

5045 on Reader Service Slip.

NEW Conveyor for Food Packaging



Cleveland Vibrator Company's new vibrating conveyor gives two way protection to materials. First, its tubular design prevents contamination and spillage. Second, its gentle vibrating motion moves delicate products rapidly and without breakage.

The unit pictured here is now conveying loose macaroni in a western food plant at the rate of 5 tons per hour. The brittle product is moved without breakage and is fully protected from accidental pollution.

Cleveland Vibrating Conveyors are operated by low pressure compressed air. The drive mechanism has only one moving part, which is automatically lubricated, reducing maintenance to virtually zero. Because of its simple design initial cost is below that of conventional conveyors.

Cleveland conveyors can be mounted either by pedestal support or overhead suspension, making installation inexpensive and rapid.

Write today for complete details on these low cost conveyors.

Bin Stuck Lately?

THE CLEVELAND VIBRATOR CO.

Dept. G10 • 2818 Clinton Ave. • Cleveland 13, Ohio

5046 on Reader Service Slip.

Transfer Fluids Fast

—LIKE GAS IS PUT IN YOUR CAR!

THE NAME IS FAST-FLO! It's Graco's light-weight air-powered pump that transfers fluids fast, "direct-from-drum"!

Just stick the Fast-Flo in the drum, attach plant air line. Open gasoline type valve at end of hose to start pump. Close valve, and pump stops. One-man operation, with absolute control *at the valve.*

Safest operation possible! No motor burnouts or sparking! No danger in hazardous atmospheres! No pressure built up inside the drum!

For the fastest dispensing and transferring you've ever experienced, find out about Graco Fast-Flo Pumps. WRITE FOR NEW IDEA BOOKLET!

SEE YOUR LOCAL INDUSTRIAL DISTRIBUTOR

GRACO *Fast-Flo* "DIRECT-FROM-DRUM" PUMPS

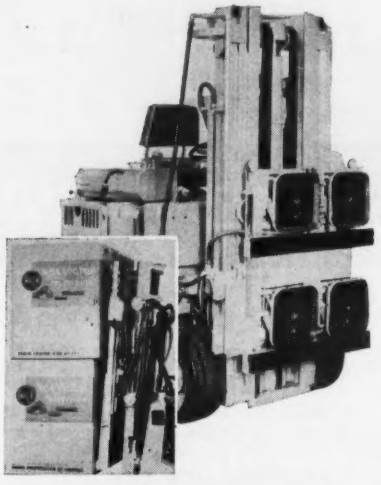
GRAY COMPANY, INC. • *Engineers and Manufacturers*
102c Graco Square, Minneapolis 13, Minnesota
FACTORY BRANCHES: *New York (Long Island City) • Philadelphia • Detroit Chicago • Atlanta • Houston • San Francisco*

5047 on Reader Service Slip.

NEW DEVELOPMENTS

Load-handling attachments for lift trucks are making 'palletless handling' the most exciting two words in material handling today. Among the attachments which are helping to make such advancement possible are the two new ones shown below

Vacuum attachment picks up cartons by suction



Four vacuum cups hold as many as four large cartons at a time by suction. Packaged unit, mounted at side of driver, provides vacuum power to cups to hold load. Inset shows closeup of vacuum cups actually holding four heavy cartons

Vacuum powered attachment for line of industrial lift trucks simplifies handling of large cartoned materials. Attachment holds as many as four large, treated cartons at a time through suction, created by four vacuum cups mounted on truck carriage.

Method eliminates need for any clamp or fork arrangement forward of carriage, thereby greatly increasing maneuverability of truck on which attachment is mounted, and preventing product damage through sharp extremities.

Attachment, which may be mounted on gas or electric powered trucks, also eliminates need for pallets or other carrying devices.

Single button releases vacuum pressure on all actuated cups. As a safety factor, however, vacuum release is prevented unless load is resting on some solid surface.

(Vacuum powered attachment for industrial lift trucks is available from The Yale & Towne Manufacturing Company, Yale Materials Handling Div., 11000 Roosevelt Blvd., Philadelphia 15, Pa.)

For more information circle 5048.

Multi-handling attachments integrated in single unit

A multi-handling attachment, which eliminates pallets in lift truck operations, combines five mechanisms into a single unit. Attachment will load or unload box cars or highway trucks, as well as pick up or stack in the warehouse.

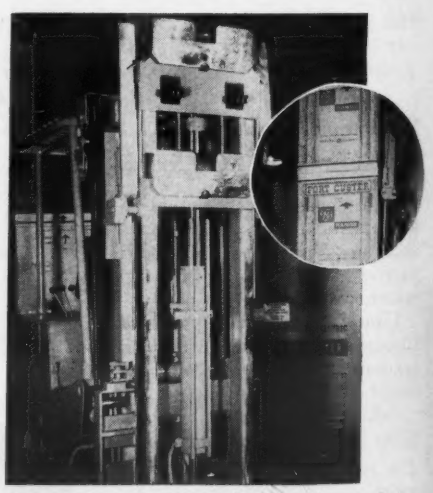
Any load is immediately handled without time-consuming change of attachments. Attachment is of particular advantage for handling extremely heavy loads.

Unit operates as a side shifter, a lift extender, a carton lip attachment, a finger lift attachment and as a pair of hinged forks which fold up out of the way when not in use.

Handling is speeded up because operator has only to guide carton lip or finger lift into position to pick up or deposit load.

(Multi-Handling Attachment is a development of Baker Industrial Trucks, a Div. of Otis Elevator Company, 1250 W. 80th St., Cleveland 2, Ohio.)

For more information circle 5049.



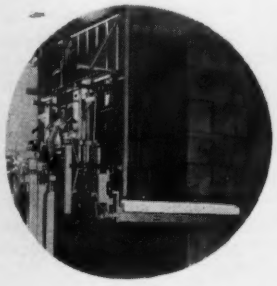
Over-all view of multi-handling attachment device for line of industrial lift trucks. Note pair of hinged forks at top which fold up out of the way when not in use. Inset demonstrates lip attachment in use

IN LIFT TRUCKS

MATERIAL HANDLING

Pictorial roundup of clamp-type attachments for lift trucks

Representative clamp-type attachments for industrial lift trucks are shown below. Large, flat, carton handling arms press gently at the sides to pick up stacks of case goods. Curved arms grasp barrels and drums. These clamp-type devices will handle feed sacks, fruit lugs, boxes and containers of all kinds.



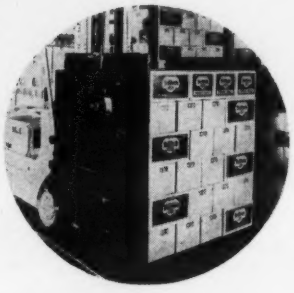
Automatic

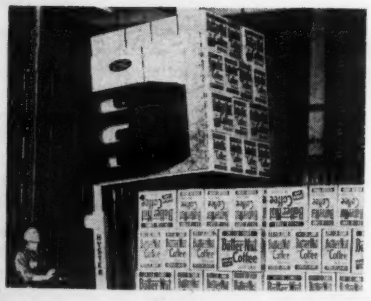
Towmotor

Clark

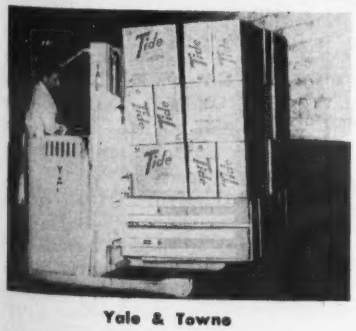
Lewis-Shepard

Yale & Towne





Hyster



Yale & Towne

BUYERS' GUIDE TO LIFT TRUCK ATTACHMENTS

In compiling a directory of firms offering palletless handling attachments for industrial lift trucks, FOOD PROCESSING editors wrote to equipment manufacturers. The following firms replied that they had such equipment available:

Allis-Chalmers Manufacturing Company, Tractor Group, Box 512, Milwaukee, Wis.

Automatic Transportation Company, Div. of The Yale & Towne Manufacturing Company, 149 W. 87th St., Chicago 20, Ill.

Baker Industrial Trucks, a Division of Otis Elevator Company, 1250 W. 80th St., Cleveland 2, Ohio.

Barrett-Cravens Company, 630 Dundee Rd., Northbrook, Ill.

Clark Equipment Company, Industrial Truck Division, Battle Creek, Mich.

The Elwell-Parker Electric Company, 4205 St. Clair Ave., Cleveland 3, Ohio.

Hyster Company, 2902 N.E. Clackamas, Portland 8, Ore.

Lewis-Shepard Products, Inc., 125 Walnut St., Watertown 72, Mass.

Towmotor Corporation, 1226 E. 152nd St., Cleveland 10, Ohio.

The Yale & Towne Manufacturing Company, Yale Materials Handling Division, 11000 Roosevelt Blvd., Philadelphia 15, Pa.

THE PURE FOOD BELT

★ that's ALWAYS CLEAN

★ NEVER SMELLS

PlasTex FOOD CONVEYOR BELT

200 SIZES
35 WIDTHS
7 THICKNESSES

- LASTS LONGER
- EASIEST TO CLEAN by any method . . . including live steam

Keeping clean, sanitary and sweet smelling in any food plant is an every day problem. Not the least of these is the conveyor belt the unpackaged food actually comes in contact with.

An *exclusive* with us and a long time favorite with food plants is our PLASTEX Food Belt. PLASTEX is our regular high quality cotton belt, coated with a tough plastic finish that won't crack or peel. It is impervious to oils, greases, acids, alkalies, moisture and temperatures from −20° to 200° F. Won't absorb or exude ANY odors and it's easy to clean by any method including *live steam* without harm to the belt.

Available in gleaming white or subdued green and maroon colors, in five standard constructions.

Send for Free Manual

that fully illustrates and describes our belts, their sizes, prices and uses.

BUFFALO WEAVING AND BELTING CO., INC.

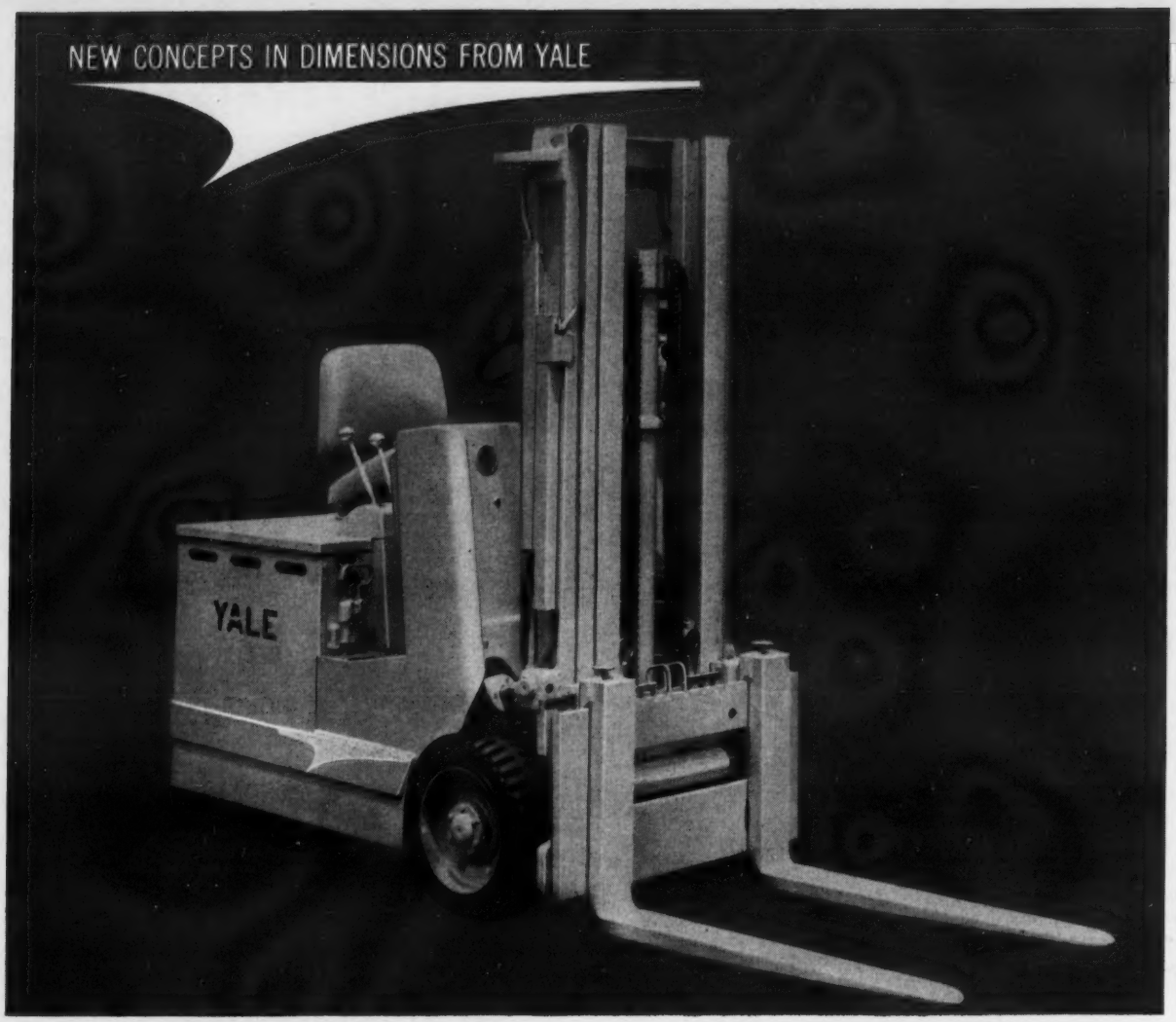
204 CHANDLER STREET BUFFALO 7, NEW YORK

NEW YORK • CHICAGO

We also manufacture a complete line of WEBBINGS & PURE SHEET RUBBER

5050 on Reader Service Slip.

NEW CONCEPTS IN DIMENSIONS FROM YALE



NEW YALE ELECTRICS • LOW • SPEEDY • MANEUVERABLE

Mechanically actuated carbon pile for smooth speed control...produces infinite motor speeds to suit any operation cycle. Dual caster wheels mounted on ball bearings provide easy steering. Short turning radius. 71" height Triplex Mast available to give 144" fork height. Other features: hydraulic wheel brakes, removable battery box, H-I single lever control for multiple function attachments. Capacities: 2,000, 3,000 lbs. For full information, contact your Yale representative or write The Yale & Towne Manufacturing Co., Materials Handling Division, Philadelphia 15, Pa., Dept. KT4-V.

YALE®
INDUSTRIAL LIFT TRUCKS
TRACTOR SHOVELS • HOISTS
YALE & TOWNE

Yale Materials Handling Division, a division of The Yale & Towne Manufacturing Company. **Manufacturing Plants:** Philadelphia, Pa., San Leandro, Calif., Forrest City, Ark. **Products:** Gasoline, Electric, Diesel and LP-Gas Industrial Lift Trucks • Worksavers • Warehousers • Hand Trucks • Industrial Tractor Shovels • Hand, Air and Electric Hoists

5051 on Reader Service Slip.

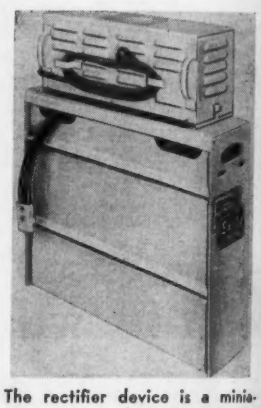
MATERIAL HANDLING

'Hitch-hiking' battery charger

Plugs in anywhere; automatically maintains proper "tapering" charge

Uses: Automatic charging unit is designed for use in one-shift operations with six-cell batteries — the size widely used for electric hand trucks.

Features: The silicon-rectifier device, with a "brainy" transistorized control unit, need only be plugged into a handy 115-volt, AC wall outlet to charge battery right in the truck. No further attention or extra equipment are needed.



The rectifier device is a miniature but capable substitute for bulky motors and generators

Input is "tapered" into the battery as the battery becomes more fully charged—an efficient and safe method heretofore provided only by motor-generator equipment.

The silicon-rectifier circuit maintains a steady direct-current charging output (system converts AC to DC) despite AC input variations of as much as plus-or-minus 15 per cent. No manual changes need to be made to compensate for AC line-voltage fluctuations or for diminishing voltages of aging batteries.

Description: Transistors of the charger's "brain unit" control a magnetic amplifier — an electrical valve which automatically varies charging

(*Continued on page 56*)

Plants, Companies, Personalities

Four Monks Wine Vinegar Co.

San Francisco, has completed new processing facilities at its branch premises near Geyserville, Calif. Addition makes Four Monks the nation's largest wine vinegar producing company, with total output maximum of nearly one million gal.

Krim-Ko Corporation

Chicago, has acquired from General Foods the Bireley's soft-drink business. Krim-Ko, which produces and distributes flavor ingredients to dairy and ice cream manufacturers, will operate Bireley's through a wholly owned subsidiary.

Norda Essential Oil and Chemical Company, Inc.

announces appointment of Louis Amaducci as vice president. For the past seven years, he had been in charge of Norda plant operations.

Felton Chemical Company

New York City, manufacturers of aromatics and flavor materials, announce appointment of George Liebel as manager of the company's Canadian Division.

R. D. Webb & Co., Inc.

Cos Cob, Conn., has named Benjamin J. Jarvis, formerly vice president of sales, vice president in charge of production at the company's Linden, N.J., plant. A. Rolph Evans, formerly in charge of manufacturing, has been appointed vice president of research and development at the Linden laboratories.

(*More on page 63*)

For more information on product at right, circle 5052 see information request blank opposite last page.

Colonial Stores, Inc., use hundreds of trucks in their 473-store grocery operation covering eleven states. The job of hauling tons of coffee beans from shipside at Norfolk, Va., to the roasting ovens in Atlanta was entrusted to this Mack B-61 tractor. It clocked an amazing 503,438 miles before the head or pan was taken off the engine. Today, looking almost like new, it is working its way toward the million-mile mark.

How you can bring truck upkeep down...

Over 500,000 miles at less than $.003 per mile

Maintenance cost records are a basic measure of truck performance, and the records of Colonial Stores, Inc., Atlanta, Ga., tell a revealing story about the upkeep cost of Mack trucks. Take, for example, the Mack Thermodyne® diesel tractor that has been handling their tough 1200-mile Norfolk express run since the spring of 1955.

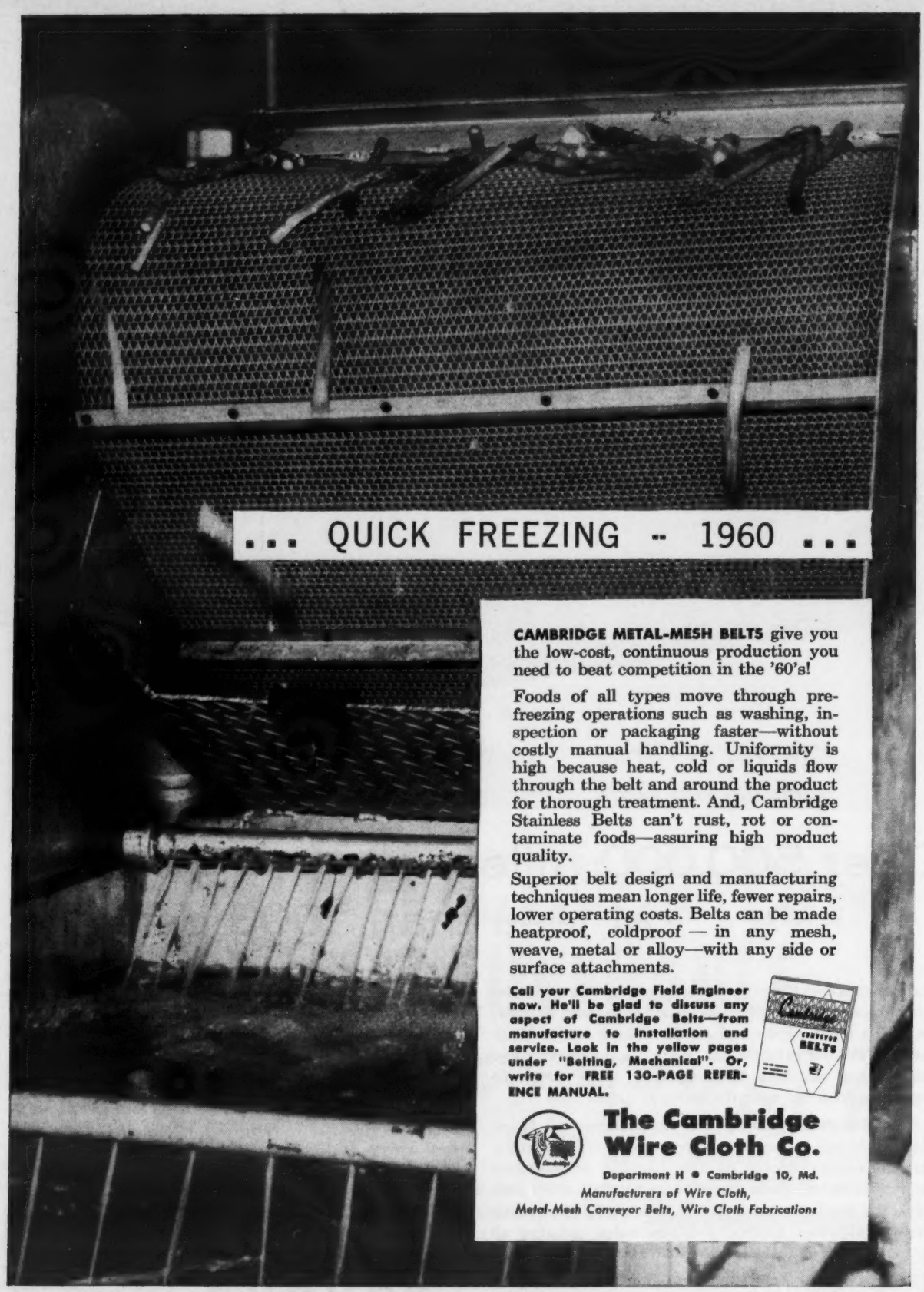
Despite the steady day-in, day-out pounding this Mack received, it was not until this spring, after 503,438 miles, that the engine received its first overhaul. Maintenance records showed oil use averaged only one quart every 1300 miles, and bearing wear was found to be negligible. Upkeep for four full years, and half a million miles, including all parts and labor, figured out to less than *a third of a cent a mile.*

Records like these are of utmost importance to everyone who needs dependable, economical truck transportation. They prove that Macks can be confidently assigned to your most important loads and routes with the assurance of on-schedule deliveries and trouble-free, low-upkeep operations . . . with only routine maintenance and downtime.

Contact your Mack branch or distributor for the names of Mack owners near you who can show how Macks have paid off in their operations. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ontario.

MACK
FIRST NAME FOR
TRUCKS

MACK for over 6 straight years NO. 1 by far in sales of diesel trucks


... QUICK FREEZING -- 1960 ...
CAMBRIDGE METAL-MESH BELTS give you the low-cost, continuous production you need to beat competition in the '60's!
Foods of all types move through pre-freezing operations such as washing, inspection or packaging faster—without costly manual handling. Uniformity is high because heat, cold or liquids flow through the belt and around the product for thorough treatment. And, Cambridge Stainless Belts can't rust, rot or contaminate foods—assuring high product quality.
Superior belt design and manufacturing techniques mean longer life, fewer repairs, lower operating costs. Belts can be made heatproof, coldproof — in any mesh, weave, metal or alloy—with any side or surface attachments.
Call your Cambridge Field Engineer now. He'll be glad to discuss any aspect of Cambridge Belts—from manufacture to installation and service. Look in the yellow pages under "Belting, Mechanical". Or, write for FREE 130-PAGE REFERENCE MANUAL.
CONVEYOR BELTS
The Cambridge Wire Cloth Co.
Department H • Cambridge 10, Md.
Manufacturers of Wire Cloth, Metal-Mesh Conveyor Belts, Wire Cloth Fabrications
5053 on Reader Service Slip.

MATERIAL HANDLING

(*Continued from page 54*)

current as needed and tapers off the charge at the proper rate.

To do this, the brain instantly interprets and feeds to the amplifier correct information on battery voltage, charging current and input voltage variations.

Most previous rectifier chargers, without such means of fully automatic electronic control, were limited either to constant-current charging or to electro-mechanical controlled two-step charging (high rate at beginning, low rate to finish).

Prevents battery damage

When battery is fully charged (16 hr or less), the brain unit signals for output to be reduced to a safe, low finish-charge rate which maintains full charge until truck is ready to be used.

This low rate prevents any possible damage to battery, even if charger is left on over a long weekend.

Unit's rectifying diodes are made of silicon, a material with superior charging characteristics. The silicon diodes do not deteriorate with age, are hermetically sealed and cannot be affected by dirt, dust, moisture or air. They resist temperatures to 338 F.

With no moving parts — no motors, brushes, commutators, rate-changing relays, cooling fans, dials or time-clocks — rectifier chargers require absolutely minimum maintenance.

Components are housed within a steel case bolted to the battery tray cover, and are convection-cooled.

("Power Mount" automatic silicon-rectifier chargers for industrial truck batteries — available in three single-circuit models for batteries with capacities of up to 360-, 450- or 660-amp-hr — are manufactured by Exide Industrial Division, The Electric Storage Battery Company, Rising Sun and Adams Aves., Philadelphia 20, Pa.)

For more information circle 5054 on Reader Service Slip.

"Delrin" Conveyor Chain

Nylite Conveyor Chain is *now* Nylite "D" Conveyor Chain made with Dupont's new "Delrin" acetal resin

...a completely new material that offers you metal-like mechanical properties, such as a high degree of strength and rigidity . . . plus properties that metals do not possess.

Under rigid comparative tests for the past two years, Nylite "D" Conveyor Chains experienced:

- practically no discoloration
- practically no water absorption
- little or no stretch
- no warpage
- no buckling
- no loss of rivets (switched from pins to rivets)

We believe Nylite "D" Conveyor Chains are the finest performing conveyor chains in the food industries (for bottles, cans or cartons).

Now in stock: 3" — 3¼" — 4" — 4½" — 6" widths

Write today for new pamphlet

FENCO, INC. | 125 N. Racine Ave. Chicago 7, Illinois

5055 on Reader Service Slip.

Fork trucks and pallets and fork truck clamp-handling attachments — the two major methods of unit-load handling in food processor warehouses — were discussed pro and con in previous FOOD PROCESSING issues (May, July and August).

Now, here is brief rundown on

Other unit-load methods

On a lesser scale than either lift trucks and pallets or clamp-handling attachments, multi-pronged forks and other specialized lift truck accessories are being tried.

One palletless unit-load method, being used by Kroger and Safeway in some areas, is built around lift trucks which have seven-tine fork attachments.

Order-picking is done onto four-wheel wagons which have slatted or ribbed decks.

When an order is ready for shipment, the seven-tine fork slips under the load (between the slats or ribs which comprise the floor of the wagon) and lift entire load for deposit directly in truck van.

Pusher attachment above the forks (note photo) keeps load in position while tines are being withdrawn. Safeway reports that two-high stacks are easily handled into over-the-road trucks.

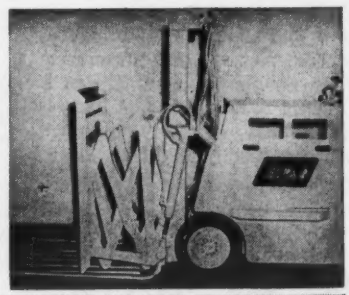
Many processors are using load-locking glue to bond cases together securely in unit loads. Glue is applied to underside of cases as they pass over glue rollers prior to unit-loading. The trick, according to users, is to apply just the right amount of glue.

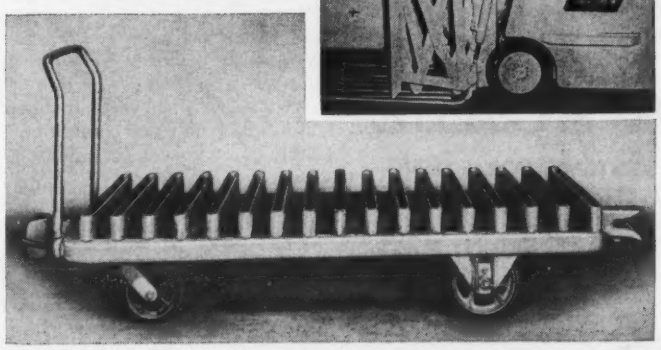
At destination, cases are snapped apart with relative ease, and with minimum damage to cases.

Bag-strap method

A unitizing method for shipping bagged coffee from South and Central America, using web belting approxi-

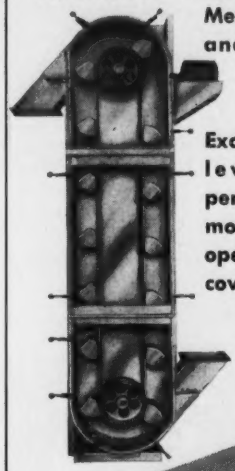
(Continued on next page)





For palletless handling of bags and cartons, special ribbed-deck trailer of type shown teams up with representative lift truck (inset) equipped with multi-tine forks and pusher attachment

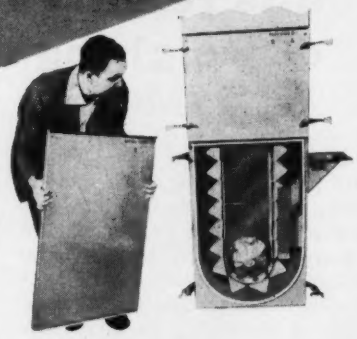
SANITARY CENTRIFUGAL DISCHARGE CONVEYOR



Meets Municipal and Industrial sanitary standards.

Exclusive cantilever design permits total removal of quick-opening casing covers for easy cleaning.

Write today for NEW FREE CATALOGS on Bulk Material CONVEYOR ELEVATORS for Food Industries



SANITARY CONTINUOUS DISCHARGE CONVEYOR

Overlapping buckets provide gentle product handling.

Loading is direct into buckets.

Discharge is by gravity.

buck-el CONVEYOR ELEVATOR

product of

THE BUCKET ELEVATOR CO.

57 Union Place

Summit, New Jersey

See us at the Chemical Show, Booth 1038 at the New York Colosseum, Nov. 30 thru Dec. 4, 1959

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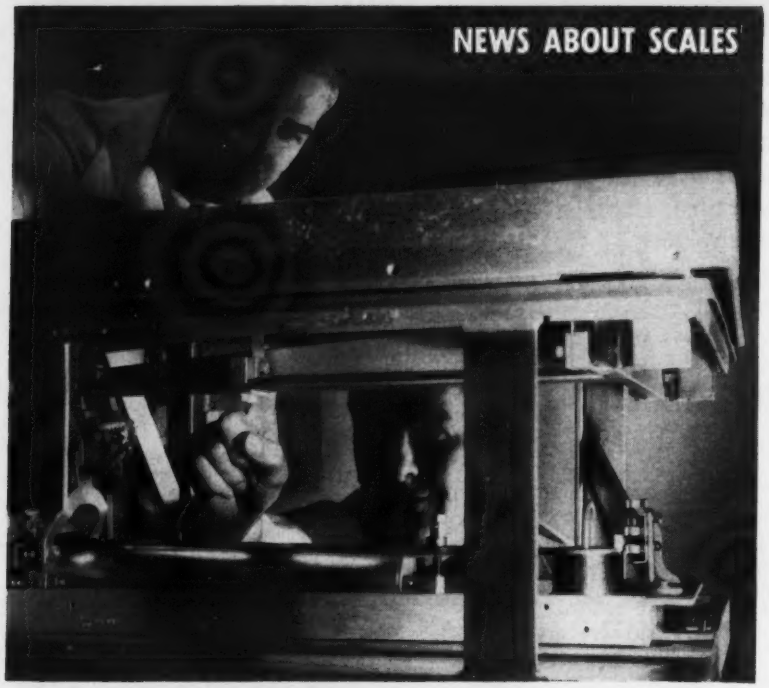
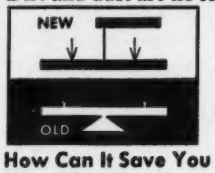


How do they build unvarying accuracy into this remarkable new kind of weighing instrument?

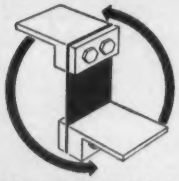
For 7,000 years men have employed the multi-part pivot balance to compare weights. As the parts of their pivot joints wore, the problem of retaining accuracy became more and more acute. Then in 1956 the United States issued a patent for a "Thayer Flexure Plate" Leverage System. A team of engineers and businessmen, aware of industrys great cumulative loss of materials in weighing operations, had devised a revolutionary new scale. Knife-edge pivots that progressively wear and change were replaced by Thayer Flexure Plates that move only .001", yet accurately reflect the minutest changes in weight. This *firmly joined* lever withstands shocks and vibrations indefinitely. Dirt and dust are no longer a problem.



Thayer guarantees this leverage system accurate for the life of the scale.

How Can It Save You Money Year After Year?

Working in conjunction with straight electrical controls, it forms the most reliable, low maintenance system ever devised to control processing or materials handling *by weight*. Literature on its application to filling, batching and checkweighing operations is available on request.



THAYER SCALE

AUTOWEIGHTION SYSTEMS FOR FILLING, BATCHING AND CHECKWEIGHING

THAYER SCALE CORP. **PEMBROKE, MASS.**

5057 on Reader Service Slip.

MATERIAL HANDLING

(*Continued from preceding page*)

mately 22 ft long, is reported by D. B. Mott, vice president of Encinal Terminals and Warehouses, Alameda, Calif.

Two of the belts are strapped (in parallel) around the load and through the pallet. Ends are cinched tight through a buckle, and tied together to give a tight load.

Method has greatly reduced damage to bags and has speeded handling, Mott states.

Grocer distribution warehouses are working on their own internal unit-handling methods. Because of the specific needs of order-picking functions, their methods often differ from methods used in processors' warehouses.

(Multi-tined pusher attachment for palletless handling of packaged or bagged material is available on 2000- and 3000-lb capacity electric fork trucks manufactured by The Elwell-Parker Electric Company, 4205 St. Clair Ave., Cleveland 3, Ohio.)

For more information circle 5058 on Reader Service Slip.

(All-steel warehouse trailer with specially ribbed deck, available in sizes and weights to meet particular requirements, is manufactured by Palmer-Shile Company, 16008 Fullerton, Detroit 27, Michigan.)

For more information circle 5059 on Reader Service Slip.

Less hp with cable conveyors

Four-page brochure offers discussion on merits of cable conveyors, their application to material handling problems.

Detailed analysis of factors to consider when evaluating cable-link conveyors, such as weight and power consumption, is presented.

A brief history of cables and false concepts concerning cable conveyors is included.

("Why Cables?" is available from the Dearborn Fabricating & Engineering Co., 19440 Glendale Ave., Detroit 23, Michigan.)

For your copy simply circle 5060 on Reader Service Slip.

HOLZ Vulco-Lagged PULLEYS

GRIP BETTER TO KEEP TRACTION.. UP UP

DRIVE HARDER TO KEEP PRODUCTION.. UP UP UP UP

WEAR LONGER TO KEEP PROFITS.. UP UP UP UP

VULCO-LAG PULLEY

HOLZ Vulco-Lagged PULLEYS step up performance and eliminate seasonal maintenance to save you dollars and downtime! Tough, abrasion-resistant lagging of specially compounded rubber is permanently bonded to metal pulleys for positive, non-slip driving. Pulleys run longer without relagging*; belts run longer without renewing! Have lagging applied to **your** pulleys, or order **HOLZ Vulco-Lagged Pulleys** complete. Write for detailed information today.

*Up to 10 years operation reported on HOLZ Pulleys.

"IF IT'S RUBBER, WE CAN MAKE IT!"
SERVING INDUSTRY FOR A QUARTER CENTURY

HOLZ RUBBER COMPANY, INC.

1133 SOUTH SACRAMENTO STREET
LODI, CALIFORNIA
Dealer inquiries solicited.

5061 on Reader Service Slip.

GAYLORD PLAYS PROGRESSIVE WHEN IT COMES TO PACKAGING

Whether you want a new variation on an old favorite, or a "way-out" box, Gaylord has the experience and vision to compose containers that waltz through your packaging operation.

Be sharp . . . stay in the key of G. Ask your G-Man to sit in on your next packaging session, and watch him harmonize.

GAYLORD
CONTAINER CORPORATION

Gaylord Boxes

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**

For more information on product at right, circle 5062 see information request blank opposite last page.

P. O. Box 5096 - PErshing 4-5151
3528 Fredericksburg Road
SAN ANTONIO 1, TEXAS

MEYER MACHINE COMPANY

Meyer Bucket Elevators handle bulk materials without breakage, damage, locking or jamming. The design of the intake prevents materials from dropping into elevator boot, thus eliminating production loss for clean-out. Positive discharge prevents intermixing of materials when more than one product is run in the same elevator. Manufactured of heavy guage steel throughout, these elevators give long, trouble-free service. Available in any height or capacity.

Also available with Geared Motor Drive

- SAFE
- GENTLE
- EFFICIENT

Chain tensioning units automatically compensate for normal wear or stretch of heavy duty chain. Buckets are of aluminum or stainless steel. Sealed, self-aligning ball-bearings throughout.

Write for Bulletin 812

MEYER BUCKET ELEVATORS

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TON-TEX Perma-Cleat Belts

move more food products faster up steeper inclines!

Sanitary conveyor belting for the entire food industry

Write for free 20-page Conveyor Belt Catalog today

Food packers, canners, processors find Perma-Cleat belts give better service. This non-toxic, white belt has solid molded neoprene cleats permanently vulcanized to it. Cleats are made any width or spacing, up to 3" high. Perma-Cleat belts resist water, oil, acid, heat, mild abrasion. Can be washed and kept clean — will not impart taste or odor to products carried.

TON-TEX CORPORATION, GRAND RAPIDS 2, MICH.
31 COLUMBUS AVENUE, ENGLEWOOD, NEW JERSEY
1180 AUZERAIS AVENUE, SAN JOSE 26, CALIFORNIA

TON-TEX CONVEYOR AND TRANSMISSION BELTING

5064 on Reader Service Slip.

Here's practical 'magic carpet' for heavy, bulky loads!

'Float' cargo over floor

- **Two methods — pneumatic floor or pneumatic pallets**

NORB LEINEN
Associate Editor

NEW approach to material handling that literally "floats" heavy, bulky cargo on a cushion of air already shows potential far beyond original purpose of speeding up loading and unloading of cargo aboard aircraft.

"Glide-Aire" system involves use of low-pressure air — supplied either through a specially designed pneumatic floor or through a pneumatic pallet — which supports loads sufficiently to greatly reduce the coefficient of sliding friction.

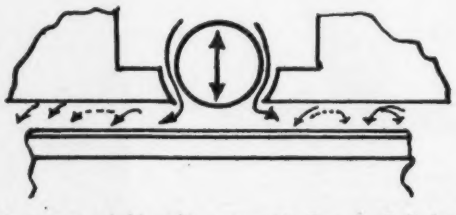
In pneumatic floor version of system, a carefully spaced pattern of orifices equipped with ball-check valves provides the means of pallet support.

As specially designed pallet moves over floor, it depresses successive rows of the slightly protruding ball valves set in floor surface — permitting emission of air — while at the same time releasing pressure on other ball valves, which again rise up to seal their orifices (note diagram).

Thus, pallet receives a continuous air "cushion" with minimum loss of air.

Pallet's design is unique in that a resilient filler between the pallet and its smooth bottom "gives" sufficiently under air pressure from floor to provide needed space for cushioning action of air.

Alternate, pneumatic pal-



Air pressure, held within pneumatic floor by ball-check valves, is released through orifices when sliding pallet depresses balls

Size and spacing of valves shown in this air-in-floor test floor (large circles) can be varied to provide optimum force and flow of air for specific use applications. Pallets shown do not have the specially designed bottoms required (see article)

on cushion of air

- **Move in any direction on flat surface**

let version of system, designed for use on a smooth concrete floor, consists of a plenum-type pallet with a number of resilient discs attached to its bottom (see photo below).

Air is supplied to pneumatic pallet through a length of flexible hose, and the supporting cushion of air emerges through an orifice in the center of each disc.

Performance examples

The air cushion obtained with either method drastically reduces the apparent coefficient of friction between pallet and working surface.

This not only eases handling of loaded pallets, but keeps pressures and airflow quantities well within the range of commercially available compressors.

As example, to move a 60 by 90 in. pallet, carrying a 5300-lb load, across a "Glide-Aire" pneumatic floor requires 250 cfm of air at four psi, and places a 4.3-hp load on the compressor. Force needed to move load is only 12 lb.

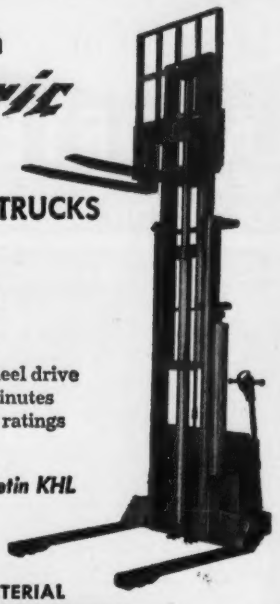
A "Glide-Aire" pneumatic pallet, carrying a 1200-lb load, requires a moving force of only seven lb if 68 cfm of air at pressure of seven psi is provided. Load on compressor is 2.1 hp.

More pros than cons

"Glide-Aire" system, like every other known system of

(*Continued on next page*)

modernize with
HydroLectric



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- Braking with handle in any position
- Automatic parking brake (optional)
- Sealed alloy gears instead of chains
- Sealed ball-bearing rollers in masts
- 100% more steering ease with two wheel drive
- Power unit removal complete in 20 minutes
- Greater tire capacity equivalent load ratings

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- *Write for Bulletin KHL*

A TRUCK FOR EVERY PURPOSE AND MATERIAL

LIFT TRUCKS, INC.
CINCINNATI 14, OHIO

5065 on Reader Service Slip.

CY BELT says

"We make more different types of processing belts than anyone else!"

Cyclone makes all four basic styles of conveyor belting: spiral woven friction drive, spiral woven chain drive, flat wire friction or sprocket drive, and flex-grid. These are available in the widest variety of sizes, meshes, weaves, steels and alloys. We make reinforcing members, flights, side plates and other specialties to meet specific needs. That's why our recommendation can be tailored to *your* plant and *your* product. Why not contact a trained Cyclone representative for help in analyzing your processing and material handling problems? Fill in the coupon today.

USS and Cyclone are registered trademarks

USS **Cyclone Metal Conveyor Belts**
Spiral Woven · Flat Wire · Flex-Grid

Prompt service to belt users is assured by two factories, one in the Middle West and one on the Pacific Coast.

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Manufactured at Waukegan, Ill. and Oakland, Calif. - Sales Offices, Coast to Coast

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Cleveland 13, Ohio

Please send me, without obligation, your catalog No. 5 on Cyclone Processing Belts.

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Address.....
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FLEXIBLE STEEL
CONVEYOR BELTS

THE strength and durability of La Porte Galvanized Steel Conveyor Belts pay off in improved performance and lower maintenance cost. The flexible open-mesh design assures a positive drive on the La Porte Sprocket, allows the free circulation of air and liquids around products in process, also makes these belts easy to shorten, lengthen, repair, or sterilize without removal from the sprocket. In addition, the hard galvanized surface resists oils, acids, detergents, grease and corrosion.

If you freeze, can, dehydrate, pickle, package, store or ship food, it will pay you to use La Porte Belts. Available in ½" x 1", or 1" x 1" in any length and practically any width. Ask your mill supplier or mail coupon for illustrated literature and prices.

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Please send free literature on your Conveyor Belt.

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5067 on Reader Service Slip.

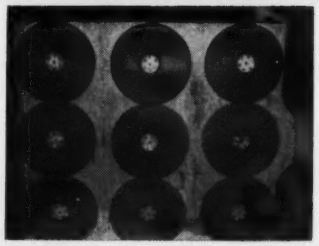
MATERIAL HANDLING

(*Continued from preceding page*)

material handling, has certain limitations.

It cannot, for example, lift cargo from one elevation to another as efficiently as some existing systems, nor can it negotiate abrupt deviations from a plane surface without mechanical assistance (push or pull).

Despite these limitations, the system has proved operationally practical in several full-scale prototype installations, and has added advantage of compatibility with existing systems — such as roller conveyors.



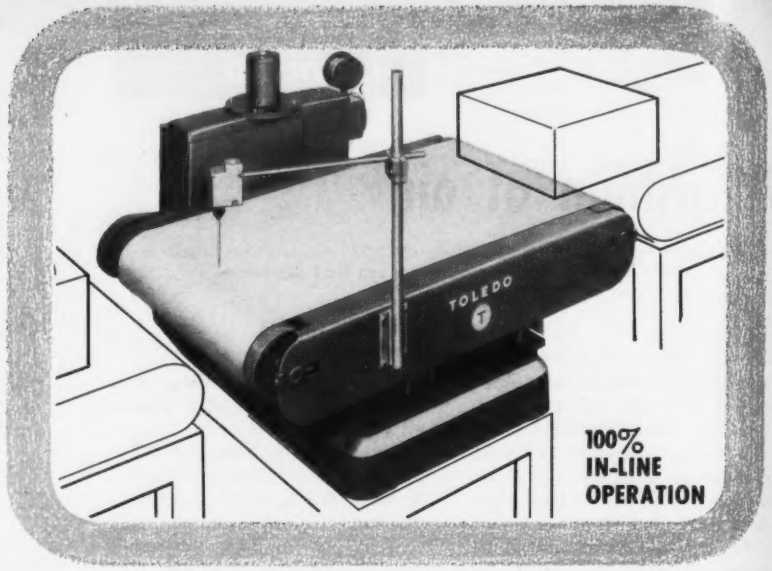
Pneumatic pallet represents variation on air-in-floor system. An orifice centered in each of nine resilient discs attached to pallet bottom (lower) permits escape of the supporting cushion of air

Prototype development has concentrated on establishing a complete handling system for air cargo, both commercial and military.

Future plans for the system include its development for surface cargo handling (including pneumatic truck-trailer beds), moving of heavy equipment or special devices and for warehousing.

("Glide-Aire" Materials Handling System, on which patent action has been initiated, is development of Douglas Aircraft Company, Inc., Tulsa Division, Tulsa, Okla.)

For more information circle 5068 on Reader Service Slip.



FAST, AUTOMATIC, IN-MOTION
CHECKWEIGHING
WITH NEW TOLEDOS

MODEL 9460
Items 50 to 200 Lbs., to 40 per min.

MODEL 9463
Items 5 to 50 Lbs., to 40 per min.

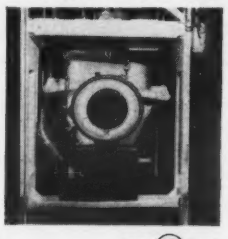
Get 100% in-line checkweighing with these new Toledos! Checkweigh bags, cartons, packages, parts and pieces automatically. You'll save time, labor and material . . . keep weights consistent . . . build customer goodwill.

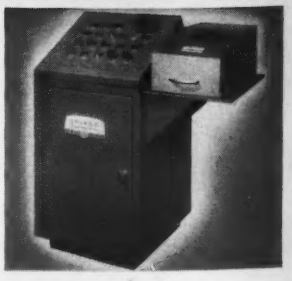
Designed with continuous-running motorized conveyor on the weigh section, these Checkweighers fit readily into conveyor lines . . . are accurate to one part in 3,000. Available with remote zone indication stations for continuous visual check, magnetic counters to accumulate operating data, and other advanced Toledo features.

Now is the time to check into Toledo Checkweighers for your operations! Send for Bulletin 2968. TOLEDO SCALE, Division of Toledo Scale Corporation, Toledo 12, Ohio.

Toledo Automatic Bulk Weighing . . . net weight listing and totaling

Get accurate net weight listing and totaling of bulk materials going into truck or carload shipments. Weighing is automatic. You save time, control costs and reduce claims. The Toledo control console which interlocks all elements of the system, may be remotely located for operating convenience. Ask for Bulletin 2490.





SERVICE Factory-Trained 240 Cities

TOLEDO®
Headquarters for Weighing Systems

5069 on Reader Service Slip.

Plants, Companies, Personalities

Archer-Daniels-Midland Company

Minneapolis, announces establishment of a new products department by its Commander Larabee division. To be headed by William L. Rainey, the department will work on new wheat flour blends and formulations, and explore new market areas for these products in the baking industry and other segments of the food industry.

Rich-Taste Corporation

Flushing, N.Y., has appointed E. G. "Jerry" Olwell, Jr., general manager.

The Nestle' Company, Inc.

White Plains, N.Y., has appointed Ben A. Murray supervisor of quality control. He was formerly director of quality control for Cherry Growers, Inc., of Traverse City, Mich.

Circus Foods, Inc.

San Francisco, leading manufacturer of canned nut products in the West and Southwest, has been acquired by United States Tobacco Company, New York City. Circus Foods currently is building a $500,000 addition to its present plant. The addition will house the candy manufacturing operation of Euclid Candy Company, a division of Circus Foods.

A. E. Staley Manufacturing Company

Decatur, Ill., has promoted Dr. Leonard F. Barrington from head of the Industrial Products Development group of Applications Research to director of Applications Research.

(*More on page* 87)

For more information on product at right, circle 5070 see information request blank opposite last page.

LOW CEILING! Less than six feet high, this Model 410 safely enters low-headroom vans, trailers, trucks and boxcars. And the new Towmotor High Free Lift Triple Mast—providing 65" of "free lift" at 180" of lift—permits floor-to-roof loading!

HIGH CEILING! Same fork lift truck stacks ton-loads of materials onto 12-foot tiers. Standard Towmotor Overhead Guard offers extra protection for operator. (Other models in "Van-Stack" series handle loads up to 3000 pounds.)

Introducing Towmotor "Van-Stack" Series Fork Lift Trucks

New Towmotor does double duty!

You'll profit in many extra ways by owning a new Towmotor "Van-Stack" Series Fork Lift Truck.

"Almost unbelievable—but I saw it!" said an amazed MHI Show-goer who witnessed this double-duty lift truck in action in June. Thousands saw it drive in low-headroom trailer, load it to roof, then stack heavy units on 12-foot high tiers.

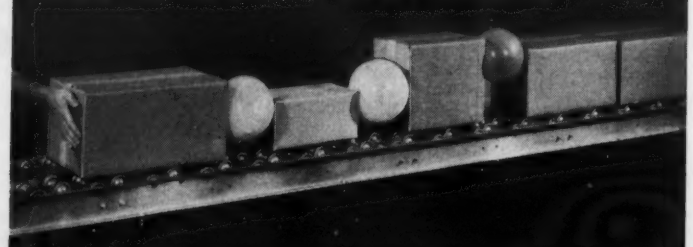
This truck (only 32" wide) zips through congested 3-foot aisles—maneuvers sharp corners—hustles big loads indoors and out—and enters elevators for fast floor-to-floor service.

On top of all this, its increased hoisting speed, dual-entry convenience, powerful 4-cylinder "economy" gas or LP-gas engine, weatherproof instrument panel—and other exclusive Towmotor features—make it the foremost fork lift truck in 2000-3000 pound class! Ask for *"Van-Stack" Series Folder SP-25.* Write Towmotor Corporation, Cleveland 10, Ohio.

TOWMOTOR® THE ONE-MAN-GANG — GERLINGER LEADERS FOR 40 YEARS IN BUILDING FORK LIFT TRUCKS, CARRIERS AND TRACTORS

Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation

new! Rapistan™ APC



pressure-sensing conveyor

ends carton pile-ups

In processing, warehousing and shipping operations — wherever materials are worked on or accumulated on a conveyor line — Rapistan's new Pressure-Sensing Conveyor performs as no other conveyor can.

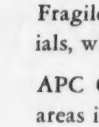
Its unique design promotes a higher degree of safety for materials and workers by providing controlled accumulation under power.

Rapistan APC (adjustable pressure) Conveyor reduces carton line pressure to such a low point that carton pile-ups are almost impossible. An entire line of cartons can be accumulated, and the total line pressure developed will be just a fraction of the weight of the first carton in the line. In the above photograph, balloons, alternately spaced between cartons, show almost no compression **while the conveyor is operating!**

It is always easy to stop the line for order assembly, packing, marking, weighing, inspection, shipping, case sealing, or whenever desired in operations involving accumulation of goods. Fragile items can be accumulated in line with durable materials, with complete safety.

APC Conveyor can give you positive control over problem areas in your handling system which never before could be so easily, economically and effectively regulated. And it does this at remarkably low cost for equipment and operation.

NEW BULLETIN TELLS ALL ABOUT APC CONVEYOR



Write for Bulletin 1200 giving all the facts about this new decade-ahead conveyor design.

Rapistan
new ideas in materials handling

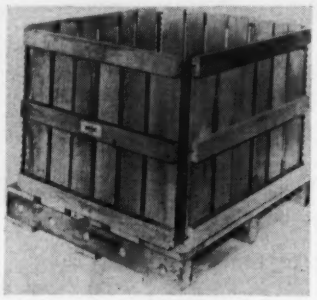
The RAPIDS-STANDARD CO., Inc.
665 Rapistan Bldg., Grand Rapids 2, Mich.

5071 on Reader Service Slip.

Reusable pallet containers ship back compactly

Based on rugged "Clinch-Tite pallet"

Uses-Features: After emptying, collapsible pallet containers can be compactly stored in plant or economically returned to shipper.

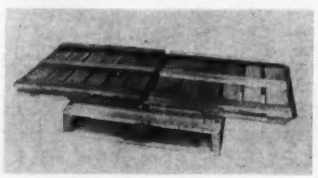


Corner helixes provide hinge action for unlimited folding and unfolding without maintenance

Containers are made in various forms such as drop-door panels, interlocking stacking design, etc. For securing panel assemblies to pallets, different quick-release devices are used.

Description: Pallet containers are built to individual requirements — there are no standard sizes.

Hardwood panels, made of ⅜ in.-thick vertical slats, are firmly secured to three or more horizontal one-by-three-in. hardwood slats.



Panel assembly is easily removed from base and folded flat

Panel reinforcement and end support for corner helixes are provided by rectangular all-welded 0.262 in. diam steel-wire frame, embedded across complete length of cleats.

(Type WS pallet container is product of Clinch-Tite Corporation, 10 N. Main St., West Hartford, Conn.)

For more information circle 5072 on Reader Service Slip.

Mixing can be murder — but Cowles Dissolvers are life savers

☐ **Savings in food coloring dispersions** — National producers of butter and other products requiring pure food and synthetic colorings in oil report much greater volume and savings in base color costs in many instances, due to better dispersions.

☐ **Soup manufacturers save time** — Used to "break up" ingredients in some cases for smoother, creamier end products. Also in mixing base products for soup manufacture. Batches of better than 85% solids handled for instant cube manufacturers.

☐ **Faster, better creaming** — Here's cookie creaming at amazing rates — formulations of water, powdered milk, eggs, sugar, shortening, flavors, etc., produced in less time with much smoother consistencies.

☐ **Fruit juice concentrates** — Cowles saves hundreds of man hours for manufacturers in fresh fruit dispersing operations. Improves end products, too.

☐ **Deaeration in volume** — Many jobs completed with Cowles alone — others require final vacuum treatment. Cowles great on mass jobs, greatly speeding up plant production. Products include chili, catsup, applesauce, baby foods, prepared mustard, etc.

☐ **Time saved on french dressings** — Much greater volume in less space, including homogenizing, without re-running on other machines. Better texture — greater stability — longer shelf life.

These are only a few examples of the great variety of applications where Cowles Dissolvers are now saving food manufacturers time and money.

It's the teeth that make the big difference

Let us prove it in your plant — at our risk!

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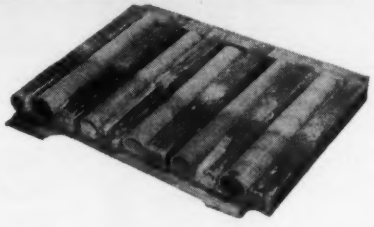
MATERIAL HANDLING



Material flow and weight causes bags to conform to crowns of the tubes, preventing slipping. Note that there are no protrusions beyond width of load to snag adjacent stacks. Right — stacking fixture with tubes in place. Stop blocks at far end assure even alignment

Really well-stacked, too!

Paper-tube 'pallets,' special fork unsnag bag handling

Problem: A. M. Devincenzi Company, 1598 Carroll Ave., San Francisco, is a bakery supply warehouse which handles approximately 240 tons of products daily. Supplies come in 450-lb fiber drums and in 100-lb cloth and paper bags.

About three yr ago, company switched from hand stacking and use of hand trucks and power conveyors to palletized load handling using a fork lift truck in all phases of its operation.

Although this helped cut handling costs, reduced damage to products and doubled effective use of available storage space, the bag handling phase continued to be less than completely satisfactory.

Both cloth bags and paper bags sometimes were punctured by splintered pallet decks, or were snagged by pallet corners when loads were moved between stacks, resulting in product loss.

Solution: For the handling

(*Continued on next page*)

Life in these excited states...

"Have you seen the pipe inspector?"

How Ace keeps you out of the tight spots

We admire men who jump right into the tough problems, but our business is eliminating problems completely. That is, problems of corrosion and contamination in piping, valves, pumps, tanks, and the like. Good equipment keeps you always in the clear. Our 108 years of experience is at your service.

Ace chemical-resistant rubber-lined steel pipe best for high-pressure, big sizes, or abrasives. Pipe, fittings and valves 1½ to 24".

Highly efficient *WE* pump. Capacity to 360 gpm. Cast iron, fully protected by top quality, chemical resistant hard rubber lining.

Design assistance and facilities for molding special fittings, pump parts, etc., of plastics or hard rubber. Also large hand-fabricating facilities.

Variety and quality to match *any* plastic piping. Riviclor PVC, Ace-Ite rubber-plastic, Parian poly, Ace Saran, Tempron high temperature nitrile, hard rubber-lined steel.

ACE processing equipment of rubber and plastics

AMERICAN HARD RUBBER COMPANY
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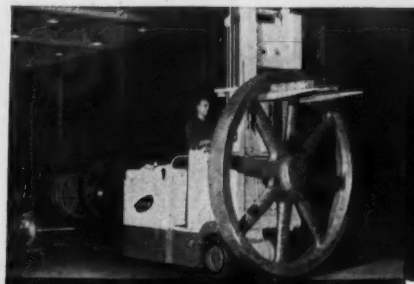
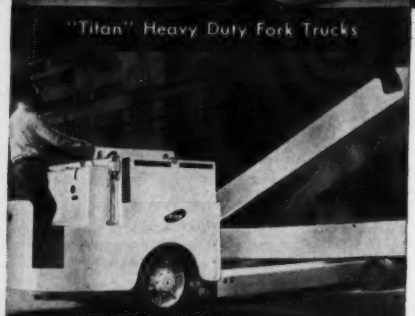
Get The Facts On
ELPAR LEASING



You can use ELPAR Leasing to put one of these cost cutting ELPAR industrial trucks to work in your plant immediately! Do it without a major cash outlay . . . and, pay the low monthly payments out of savings created by the new truck.

"Titan" Heavy Duty Fork Trucks



"Safe-Hite" Fork Trucks

4 Leasing Plans . . . Covering 150 *ELPAR* Models

1 Straight Leasing: The lowest cost form of leasing — payments are made in equal monthly installments for periods up to 5 years. Trucks complete with battery and charger may be leased. Equipment can be released as often as desired after the initial term has expired.

2 Lease With Option To Buy For $1.00: This plan gives you the option to buy the equipment for $1.00 at the termination of the lease.

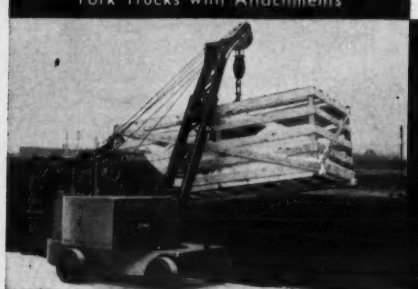
3 Lease With Option To Buy At Fair Market Value: At the termination of the lease, this plan permits you to buy the equipment at the fair market value. Monthly payments under this plan are lower than the dollar option plan.

4 Fleet Lease: Companies planning to lease a large number of trucks will find this plan attractive and economical. Consult the main office or your local ELPAR man for details.

Low Lift Platform Trucks

Die Handling Trucks

Fork Trucks with Attachments



"Cargo Scout" Fork Trucks

GET THIS FREE FACT BOOKLET . . . it contains an explanation of leasing and rate tables that permit you to estimate leasing costs. Send for it today!

Mobile Cranes

"Air-Right" Fork Trucks

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THE **ELWELL-PARKER** ELECTRIC COMPANY
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In Canada: International Equipment Company, Ltd.

TWICE THE LIFE . . . ONE THIRD THE OPERATING COST

5075 on Reader Service Slip.

MATERIAL HANDLING

(*Continued from preceding page*)

of bagged products, conventional pallets were replaced by ingenious paper-tube "pallets." Loads thus palletized are moved to and from storage by fork truck with special five-tine fork attachment and load guard.

The paper tubes used to form the "pallets" are simply salvaged newsprint cores cut into 30-in. lengths. Proper alignment and spacing of tubes to receive load is achieved by positioning tubes in a simple 4 by 4 ft wooden fixture. Latter is open at top and at one end (see photo).

Loads, in either cloth bags or paper bags, retain original alignment for indefinite periods

At time of unloading an incoming shipment, fixture is placed on dock and tubes are placed between the accurately spaced timbers of the fixture.

From 15 to 18 bags then are hand-stacked in an alternate layer pattern to help bind the load securely.

Load is picked up by means of the five-tine fork attachment, which consists of five round steel bars, two-in. in diam and 30 in. long, welded to a face plate. Assembly is attached to the standard lift truck load carriage with hanger brackets.

The tines enter the paper tubes and raise the load without disturbing the wooden stacking fixture, which then is ready for another cycle of placing tubes and building a load.

The paper tubes, meanwhile, form a "pallet" for the bagged product being carried to storage.

Stacking in storage is three to four loads high. Not only do the paper tubes use up a negligible amount of vertical

Easier food handling with Hackney Seamless Containers

More and more modern food processing plants use durable Hackney containers to cut handling costs. Here's why:

★ **Easy to clean**—with seamless construction.
★ **Easy to handle**—with stout welded handles.
★ **Easy to move**—with tough wearing ring on bottom.
★ **Easy to pour**—with a full-curled lip.
★ **Easy to select**—with a wide range of sizes in black, galvanized, tinned or stainless steel, or aluminum. Write for catalog.

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Branch offices in principal cities

CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS

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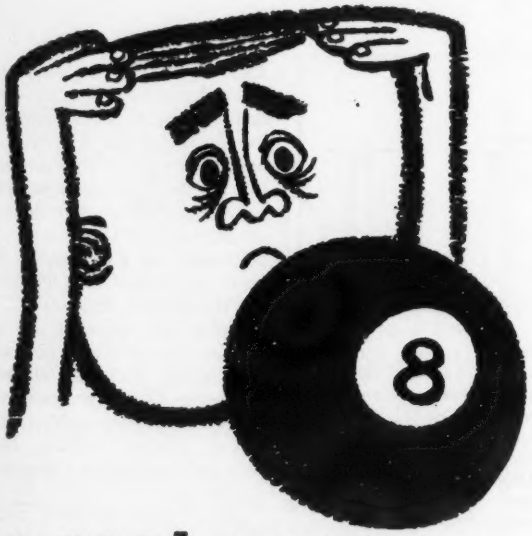


need more information . . .

Note there is a key number at the end of editorial articles or advertisements. To request more information circle the proper number on the convenient form opposite the last page. Send the form to us . . . we do the rest. Information comes direct to you. No obligation, of course.

MATERIAL HANDLING

storage space, but the stacks are solid and retain their vertical and lateral alignment.

The shipping phase of the operation is essentially the reverse of the receiving procedure. The lift truck tines reenter the paper tubes beneath each load, and loads are removed and transported to shipping area.

Wooden pallets of standard construction, used with the 450-lb fiber drums, also are handled with the five-tine fork attachment with no loss of efficiency.

Results: Product damage has been greatly reduced, because the bags no longer are punctured by splinters or snagged by pallet corners when loads are moved in and out of storage.

No load spillage has occurred using the paper tube system, and load recovery from stacks is practically 100 per cent. Weight of load causes bags to conform to crown of tubes, preventing slipping, even in repeated handlings.

Paper tubes (five cents each) are much cheaper than wooden pallets, easier to handle and store and can be reused many times.

("Space Saver 40" (4000-lb capacity) cushion-tire lift truck with special five-tine fork attachment and load guard, as in operation at A.M. Devincenzi Company, is manufactured by Hyster Company, Industrial Truck Division, 2902 N.E. Clackamas, Portland 8, Ore.)

For more information circle 5077 on Reader Service Slip.

New ventilating method for Airslide cars and bulk trucks

Licks bulk flour transport problem

and solves major milling industry headache!

Read about it in November FOOD PROCESSING

Another PLUS value...

Rex Nylon TableTop Chain is easy on your containers because *it operates without lubrication.* No lubricant stains to soil containers...no "wearing" metal-to-metal contact when handling cans!

Nylon TableTop is smooth in operation. It's quiet...easy to assemble... stays cleaner and is easy to clean.

See your Rex Distributor or write Chain Belt Company, 4699 W. Greenfield Ave., Milwaukee 1, Wis.

REX®
NYLON TABLETOP®

5078 on Reader Service Slip.

SPROUT-WALDRON

SW Pointers

for Mixing and Blending • Size Reduction • Pelleting and Densifying • Size Classification • Bulk Materials Handling

Published in the interest of better processing by Sprout, Waldron & Co., Inc., Muncy, Pa.

28' Sprout-Waldron pneumatic bulk flour truck designed to speed local deliveries.

BULK TRAILER FOR NEW JERSEY FLOUR MILLS

Delivery of a modern 1,225 cu. ft. capacity bulk body pneumatic flour handling trailer to New Jersey Flour Mills Company, Clifton, New Jersey highlights the trend to bulk handling in this industry.

The streamlined 28' bulk truck body is of single compartment construction, having seven 24"x24" inlet doors. Twin screw conveyors in the bottom of the body are driven through a positive infinite variable speed control unit. The system is self-contained and designed for efficient and economical loading and unloading at high speeds.

Lawrence F. Orbe, Jr., President of New Jersey Flour Mills Company, stated that, "bulk flour is better flour; not only from the standpoint of product cleanliness and good housekeeping, but in its improved baking qualities as well; a fact proved by leading cereal chemists. Economies to the baking industry through the use of bulk flour are also substantial. It is entirely possible that a savings of 30 to 40c/cwt. will develop through this modern method of loading out and transporting flour from mill to bakery."

For more information on Sprout – Waldron pneumatic bulk trucks, write for Bulletin 203.

PRACTICAL PNEUMATIC CONVEYOR DESIGN

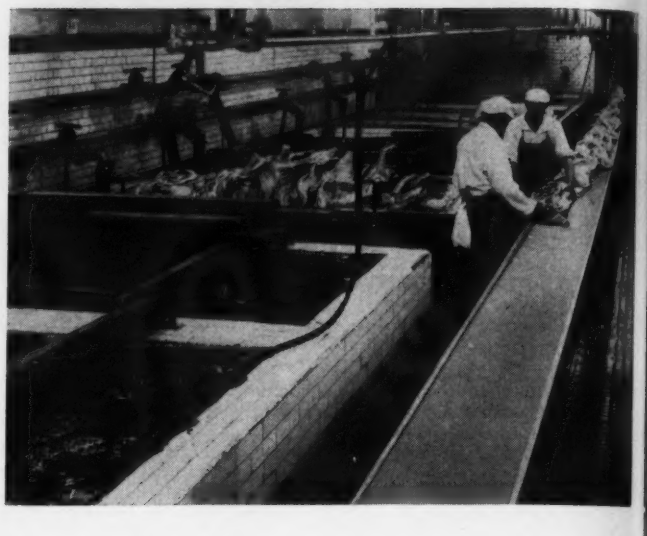
A technical article by the Chief Engineer of our Materials Handling Division. It tells how to select, operate and maintain pneumatic systems for transporting dry, bulk materials. Positive, negative and combination systems are illustrated and described. Ask for Bulletin I-28.

FOP/102

5079 on Reader Service Slip.

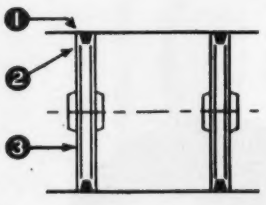
MATERIAL HANDLING

In curing room, sides of bacon are taken from 79-ft stainless steel conveyor and placed in curing vats



At British plant . . .

Sheet belt conveyors cure bacon handling problem



"Tru-Track" conveyor consists of V-ropes (2) bonded lengthwise to underside of standard Sandvik steel belt (1). V-ropes travel over sheaves (3) which provide positive tracking control. One or two V-ropes may be used — depending upon conveyor width.
Belt can be operated on inclines, or even tipped sideways. It is readily adaptable to mobile equipment.
"Tru-Track" design eliminates crowned pulleys, and such auxiliary equipment as guide rollers, pulley-scrapers and return-strand scrapers.

REPLACING a truck and roller-track system with stainless steel belt conveyors for handling heavy sides of bacon has increased production in the cutting department by 40 per cent and doubled production in the curing department at Letchworth Bacon Company, Letchworth, Hertfordshire, England.

Up to 400 sides per hr can be handled with the new system, which includes trimming conveyor, transfer conveyor, power-driven right-angle roller section, curing room belt and maturing room conveyor.

Belts are of cold rolled stainless steel, 16 in. wide by 0.024 in. thick, and are of "Tru-Track" design (see box).

Supporting structure is of tubular construction for ease of cleaning, and is aluminum-plated to depth of 0.006 in. to protect it from corrosion.

Several of the system's elements — transfer conveyor,

EDMONT CASE NO. 605: For palletizing cased bottles, a St. Louis bottling plant had been using leather gloves that wore 5 shifts. Edmont's No. 62W Grab-It gloves averaged 8 shifts and reduced glove costs from 26½c to 11c per man per day.

Edmonts reduced glove costs 60%

Grab-It No. 62W

In the case above, this bottling company saved several cents per man-hour by switching to job-fitted Edmont gloves. The glove they adopted has a rough-finish natural rubber coating that is highly resistant to cutting and abrasive action, and provides a firm, non-slip grip. Other Edmont job-fitted gloves are made in over 50 types to fit all job conditions.

Free Test Offer to Listed Firms: Tell us your operation, materials handled, temperature condition. Without cost we will recommend and supply gloves for testing on-the-job.

Edmont
JOB-FITTED
GLOVES

Edmont Manufacturing Company
1212 Walnut Street, Coshocton, Ohio
In Canada write MSA, Toronto

5080 on Reader Service Slip.

GUARD THOSE EYES

against flying particles

GUARD AGAINST hazards of flying powder, flour, grain and other particles that might cause blindness. Paulson Bubble-Goggles give full eye protection plus the comfort of an extreme-lightweight plastic goggle. Contoured to fit the face. May be worn over most eye glasses. Ventilated to prevent fogging. Full vision. No distortion or glare. Adjustable.

100% VISION NO DISTORTION WEIGHS UNDER 1 OZ. VENTILATED

Clear, Light Green or Amber

Write for Free Sample.

PAULSON MFG. CORP.
Fallbrook Calif.

5081 on Reader Service Slip.

powered roller section and curing belt — operate in either direction, providing multi-purpose service in carrying bacon sides to and from various stages in the processing operation.

Trimming conveyors measure 32 ft between centers, and run at speed of eight fpm — allowing operators to work alongside at an optimum rate.

The 53½-ft-long transfer conveyor, 79-ft curing room belt and 79-ft maturing room conveyor all operate at 18 fpm.

("Tru-Track" stainless steel belt conveyors, as in operation at British bacon plant, are manufactured by Sandvik Steel Belt Conveyors, Division of Sandvik Steel, Inc., 1702 Nevins Rd., Fair Lawn, New Jersey.)

For more information circle 5082 on Reader Service Slip.

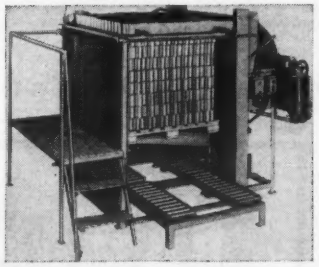
Two new depalletizers

. . . handle empty cans at rate of 700/min and 900/min, respectively

Developed to materially reduce packers' empty can handling costs, each of two new units has numerous "plus" features.

Manual unit. Tailored to keep capital investment at a minimum, while providing simple design, rugged, compact con-

(*Continued on next page*)



Both Manual depalletizer (above) and more complex Standard unit are designed to accommodate new semi-automatic features as these become available

Another PLUS value...

One glance at the simple design and smooth finish components of Rex TableTop Chains tells you they are easier to keep clean. But they pick up packing profits in other ways, too. Precision construction, maximum strength and wear resistance, reduced weight—all add up to longer life and smoother operation.

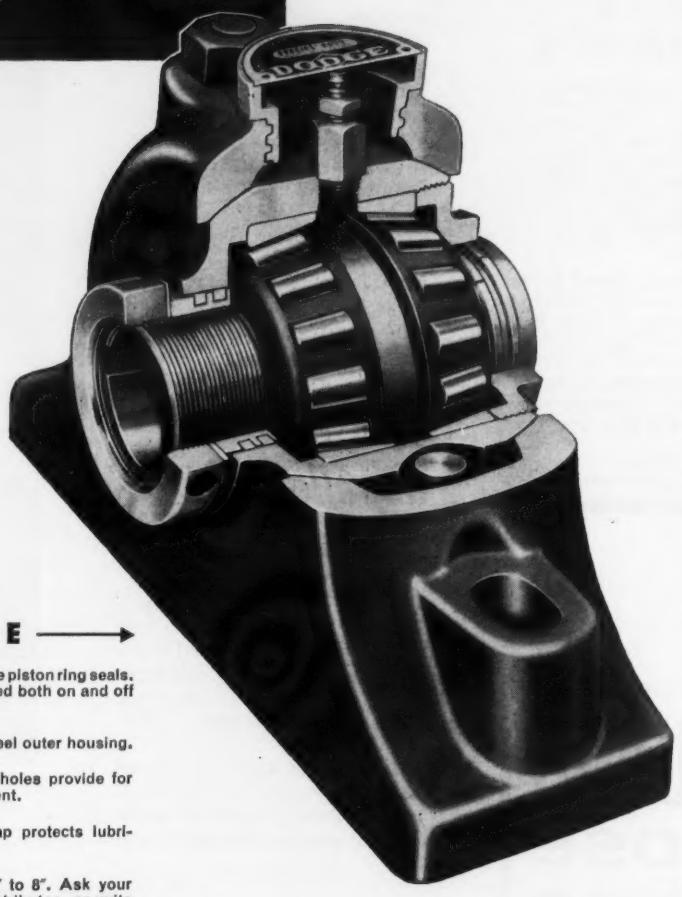
It will pay you to call your nearby Rex Distributor or write CHAIN Belt Company, 4699 W. Greenfield Ave., Milwaukee 1, Wisconsin.

REX®
CONVEYOR CHAINS

5083 on Reader Service Slip.

DODGE PILLOW BLOCKS WITH TIMKEN BEARINGS

America's super-quality line—with a 35 year record of keeping performance *up* and costs *down!* Five types—to fit practically any service condition. All assembled, adjusted, lubricated and *sealed* at the factory for precision performance—long life—dependability.



SPECIAL DUTY TYPE ⟶

- Designed for extreme precision and high load capacities.
- Fully self-aligning.
- Special Duplex Timken Roller Bearing with tapered bore.
- Split tapered sleeve with straight cylindrical bore extends through entire length of housing.
- Easy to mount or demount. Adapter nut (or collar) clamps adapter sleeve to shaft with extreme firmness.
- Automotive type piston ring seals. Bearing is sealed both on and off the shaft.
- Rugged semisteel outer housing.
- Elongated bolt holes provide for lateral adjustment.
- Special dust cap protects lubrication fitting.
- Shaft sizes 1 3/16" to 8". Ask your local Dodge Distributor—or write us for Bulletin A670 giving complete technical data on America's most complete line of mounted bearings.

DODGE MANUFACTURING CORPORATION, 2400 Union St., Mishawaka, Ind.

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

DODGE of Mishawaka, Ind.

5084 on Reader Service Slip.

MATERIAL HANDLING

(*Continued from preceding page*)

struction and safe operation, this unit (photo, page 69) operates at speeds up to 700 cans per min for the 300 by 407 size.

Machine operator is fully utilized in manually sweeping layers of cans into the waterfall blender.

Plus features include a single, sure pallet-stopping device; ability to change direction of pallet infeed and can discharge; flared pallet infeed entrance to assist proper load alignment; full-width can layer leveling plane surface easily accessible to operator for registering layer height in relation to waterfall opening.

Also, machined hoist lift fork arms to insure exact cant of pallet toward the waterfall for easy removal of can layer; increased deadplate area at waterfall entrance, and an extended top guide plate on the waterfall to keep cans in control; power blending of cans on discharge side of waterfall.

Unit has no mechanisms exposed that can be damaged by fork lift trucks and other handling equipment.

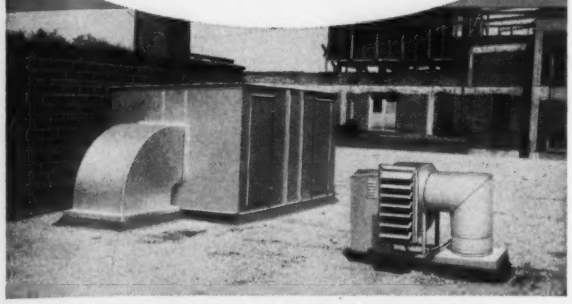
Standard unit. More highly mechanized than the Manual, this machine handles cans at speeds up to 900 cans per min for the 300 by 407 size, and requires less operator attention. Among advantages are a powered sweep arm and a can transfer (temporary storage) belt.

Sweep arm assembly is limited in height to the tin line, affording maximum visibility and personnel safety. Sweep arm and pallet hoist are interlocked, so that latter will not raise unless sweep arm is retracted, precluding serious machine damage.

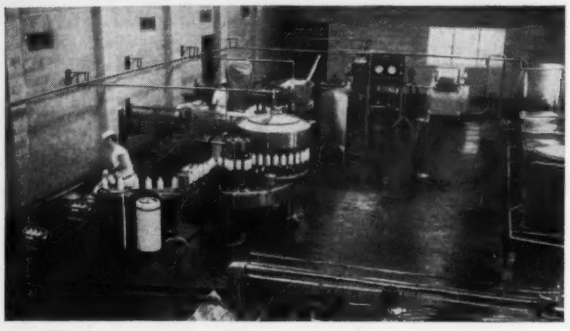
Additional advantages include an extra-long wire mesh belt to permit continuous sweeping of cans and thereby increase machine capacity, and independent variable speed drives for both the mesh belt and the power blender, thus permitting greater flexibility in adjusting these components for most efficient operation.

Such refinements as powered pallet-load infeed, can layer height indexing and me-

KLIMATIC KING
Solves Air Problems at Flynn Dairy



Klimatic King units and King utility blowers are installed on the roof at Flynn Dairy Plant, Des Moines, Iowa.



Fresh air supply grills are seen along one wall of the milk processing room.

- **No more Excess Humidity**
- **Odors Eliminated**
- **Never a Dust Problem**
- **Continuous Air Circulation**
- **Maintain Constant Temperatures**

Flynn Dairy of Des Moines, Iowa has installed Klimatic King heating and ventilating units which are especially engineered for dairy and food processing applications.

Standard units are fabricated with galvanized steel cabinets and insulated to eliminate condensation and dripping . . . have automatic temperature and ventilating controls. Units have two speed motors for "high" and "low" production periods . . . means operating economy. Klimatic King . . . the quality leader in its field . . . can be used for cooling as well with the simple addition of a cooling coil. Available in sizes 3,500 to 20,000 CFM.

Write today for detailed bulletin. More than fifty years experience at your disposal.

KLIMATIC King COMPANY OF OWATONNA
Sharp Freeze, Cooling, Ventilating and Heating Systems
911 North Cedar Street, Owatonna, Minn.

5085 on Reader Service Slip.

MATERIAL HANDLING

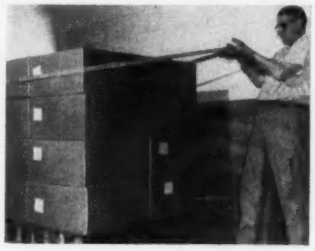
chanical separator-sheet removal can be incorporated into the Standard unit in the field at minimum expense and equipment downtime.

(Model 464-ECD-2 Manual empty can depalletizing machine and Model 465-ECD-1 Standard empty can depalletizing machine are manufactured by Continental Can Company, 100 E. 42nd St., New York 17, New York.)

For more information circle 5086 on Reader Service Slip.

Snappy way to steady shaky pallet loads

Giant versions of the familiar rubber band — measuring up to six ft long and stretching to 18 ft — provide a simple but effective means to hold lightweight cartons together in piles or on pallets.



Pallet bands can be used over and over, are easily positioned by one man

A band applied around the top layer of cartons (or bright cans) steadies an entire pallet load, yet does not "crush" into the carton sides as might steel strapping, wire, rope or pressure tape.

Many cartons packed with lightweight material — for example, ice cream cone cakes — lack enough bulk to resist such pressures, and change shape just enough to cause the fastening device to hang limp around the cartons.

(Giant rubber bands for use in stabilizing pallet loads are manufactured by B. F. Goodrich Industrial Products Company, a division of The B. F. Goodrich Company, 448 S. Main St., Akron 1, Ohio.)

For more information circle 5087 on Reader Service Slip.

Another PLUS value...

ECONOMICAL CONVEYING

Where maximum economy in roller chain conveyors is required, investigate the advantages of Rex Double-Pitch Roller Chains. These chains are built to the same high standards of quality and strength as standard Rex Roller Chains but offer important economy advantages because of their design. Each length of double-pitch chain has only *half* the number of parts of an equivalent-length standard roller chain. It costs less... it weighs less. For all the facts, see your nearby distributor or write Chain Belt Company, 4699 W. Greenfield Ave., Milwaukee 1, Wis.

REX®
ROLLER CHAINS

5088 on Reader Service Slip.

DAY

Pneumatic Conveying & Bulk Storage News

FREE! for selecting
PNEUMATIC CONVEYING
and BULK STORAGE TANKS

BULLETIN M-588—12 page DAY pneumatic conveying guide just off the press. Discusses types of systems, illustrates and diagrams high and low density arrangements, shows equipment and tells "why" and "wherefore" of all types of pneumatic conveying including so-called fluidizing systems.

BULLETIN 574—12 pages, describes horizontal and vertical storage tanks. Points out savings and is filled with photos of various installations plus description of auxiliary equipment.

Whatever your pneumatic conveying or bulk storage problem, look first in these DAY bulletins. They are valuable aids in selecting and ordering the right equipment for your plant. For your free copies use reader service card of this magazine or write direct toDAY.

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EQUIPMENT ONLY OR A COMPLETE SYSTEM

5089 on Reader Service Slip.

MATERIAL HANDLING

View of flat-bed trailer which holds six 24-bushel wirebound pallet bins. Pickers bring baskets of asparagus spears to the trailer. Baskets are emptied into aluminum tubs of predetermined weight for weighing. Tubs are poured directly into bins. Pallet bins never touch the ground in the field

From 60 manual handlings to 2 mechanical handlings

Stokely-Van Camp replaces 4/5-bushel field crates and manual handling operations with 24-bushel wirebound pallet bins and a mechanized system in moving asparagus from field to cannery

IN moving asparagus from the field to the cannery at their Hoopeston, Illinois plant, Stokely-Van Camp used small 4/5-bushel field crates. These crates were distributed throughout the asparagus fields to be filled by pickers.

Once filled, they were collected, manually stacked on trucks and carried to the cannery where asparagus is processed. At the cannery, the small crates were manually removed from the trucks and placed on conveyors which carried them to the actual processing line.

Jumbo, wirebound pallet bins of 24-bushel capacity (30

Truck, which shuttles between asparagus fields and cannery, is loaded two-high with wirebound pallet bins filled with 500 to 550 pounds of asparagus each. Tractor-mounted lift trucks transfer heavily loaded bins from flat-bed trailers to the trucks which carry loaded bins to cannery

KINGAN
BLAST-CHILLS
TO GIVE MEAT A
COOL SEND-OFF

cars or trucks cooled in minutes

Pureco CO_2 Receiver at work blast-chilling a rail carload of product at the Kingan Division of Hygrade in Indianapolis. Three minutes cools a carload and holds the temperature 4 to 8 hours. Pureco-developed blast-chilling is ideal for quick chilling of meat and many other products.

Kingan Division of Hygrade Food Products now uses Pureco blast-chilling to protect meat shipments.

Pureco CO_2 liquid is sprayed into the car or truck immediately after loading, momentarily reducing interior air to sub-zero temperatures. Car heat and heat from loading are instantly removed, thus assuring immediate shipment at storage temperatures.

Initial "warming" period of the product is thus avoided. Condensation is minimized, because air in the car is displaced by a super-dry CO_2 atmosphere. Growth of bacteria and mold is inhibited. Bloom and color retained.

Blast-chill it! . . . Call your local Pureco man for details.

PURECO CO_2

Pure Carbonic Company

A division of Air Reduction Company, Incorporated
Nation-wide "DRY-ICE" service-distributing stations in principal cities
General Offices: 150 East 42nd Street, New York 17, N. Y.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND AN AIR REDUCTION PRODUCT

5090 on Reader Service Slip.

MATERIAL HANDLING

times as much as each of the individual field crates), which may be handled mechanically both in the field and at the cannery, have reduced this time-consuming operation from 60 manual handlings to two mechanical handlings.

Under the new setup, asparagus, which is gathered in the field over a wide area, is brought to flat-bed farm trailers which hold six of the 24-bushel wirebound pallet bins.

After the asparagus has been weighed, it is poured directly into the bins. When the bins are filled with between 500 and 550 pounds of asparagus each, the trailer is driven to a receiving station.

Fork lift truck unloads wirebound pallet bins filled with asparagus, stacks bins close to the conveyor which feeds them to the production line and reloads trucks with emptied bins for return to the field

At the receiving station, bins from various flat-bed trailers serving the fields, are moved by fork lift truck onto farm trucks or semi-trailers. For relatively short hauls on farm trucks, filled bins are stacked two high. Three-stacking is often done in semi-trailers hauling longer distances.

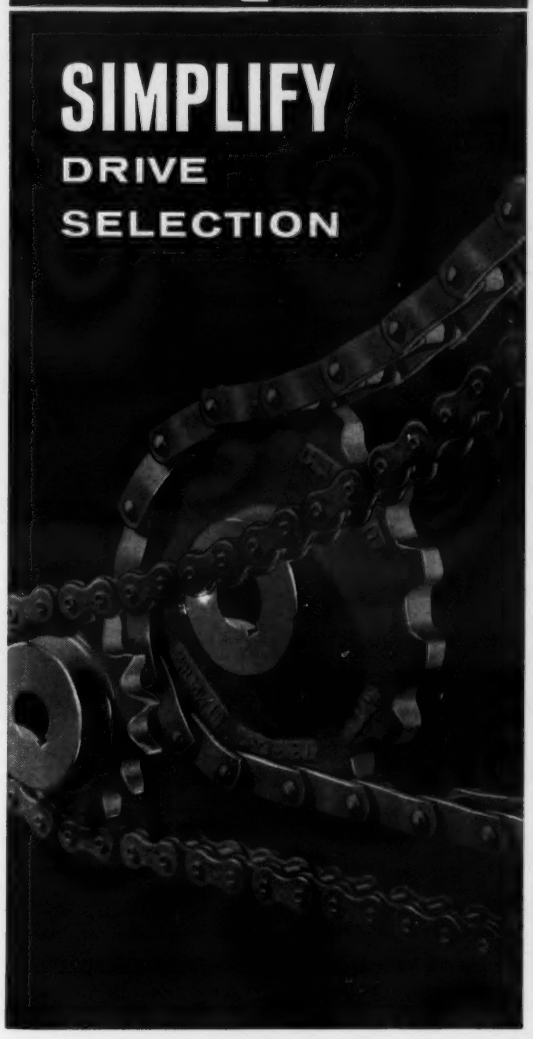
At the same time filled bins are transferred from the flat-bed trailers to a truck, empty bins, coming from the cannery, are transferred to the flat-bed trucks to be returned to the field.

Since trucks are loaded and unloaded almost simultaneously, "turn-around" time has been cut to a minimum. Formerly even with six workers unloading the filled small crates and loading empties

(Continued on next page)

Another PLUS value...

SIMPLIFY
DRIVE
SELECTION



Here's how to save time and money in your chain drive selection. Rex Stock Chain Drives, ranging from ½ to 100 h.p.... driver sprocket r.p.m. of from 5 to 2000... offer you your most economical selection. They cover both Rex Roller Chains and Rex Chabelco Steel Chains with necessary sprocket selections. To save you time in selection, the Rex Stock Drive Selection Bulletin shows you how to select the right drive in 4 easy steps. For your copy, see your Rex Distributor or write Chain Belt Company, 4699 W. Greenfield Ave., Milwaukee 1, Wisconsin.

REX®
STOCK CHAIN DRIVES

5091 on Reader Service Slip.

You can automate from bin to batch with Richardson equipment

Whether your requirements are large or small, a Richardson Select-O-Weigh automatic proportioning system offers you the advantages of – **1.** Savings in labor costs. **2.** Increased productivity. **3.** Quality control. **4.** Better housekeeping. **5.** Permanent printed records. Incorporated into and governed by a Select-O-Weigh System are such units as –

Feeders – Designed to handle your material quickly and quietly – hundreds in use on all kinds of products.

Scales – Richardson Automatic Scales are known for speed and dependability. Any number can be remotely controlled by a Select-O-Weigh system.

Controls – Program your production and processes by punched card, formula board, formula capsule or weight-selector verniers. Only Richardson offers all four. Control is from a single electronic panel board, operated by one man. No special training is required.

Readout–Richardson furnishes counters, totalizers, printers, typewriters and recorders of all types.

Richardson's nationwide network of service facilities is at your disposal within 24 hours if required. Likewise, Richardson helps you at start-up of your system and thoroughly checks it in operation. For full details on how you can automate your processing with Richardson equipment, write or call today. 1791

Richardson Scales conform to U.S. Weights and Measures H-44 for your protection.

Here's the answer . . .

Richardson

MATERIALS HANDLING BY WEIGHT SINCE 1902

RICHARDSON SCALE COMPANY • CLIFTON, NEW JERSEY

Sales and Service Branches in Principal Cities • Also manufactured in Europe to U.S. Standards.

5092 on Reader Service Slip.

MATERIAL HANDLING

(*Continued from preceding page*)

back on the truck, long delays were often experienced.

Reported economies, using jumbo bins and mechanized system, include an estimated long-range reduction of one-half in container costs and an expected one-third increase in life expectancy of containers.

At least one-fourth savings is expected in labor costs in receiving and handling asparagus at the plant, and important labor cost reductions are also expected in handling and loading trucks in the fields.

An added bonus, reported by Stokely-Van Camp, has been a pronounced reduction of loss due to waste in the field and broken heads of asparagus spears that resulted from repeated handling when small field crates were used.

(Facts on 24-bushel wirebound pallet bins may be obtained from Wirebound Box Manufacturers Association, 105 S. LaSalle St., Chicago 3, Illinois.)

For more information circle 5093 on Reader Service Slip.

Design for better bulk handling

Bulletin is a progress report on the development of a theory on flow of bulk solids.

A technical summation of the work done in this field to date, it covers in detail the relationship between flow properties and design criteria.

In addition, report includes mathematical concepts, flow properties, measurement of flow properties and design criteria of storage plants.

Report is illustrated with graphs and curves of the experimental work and photos of the equipment used.

Material comprising this bulletin was presented at the February 1959 annual meeting of the American Institute of Mining, Metallurgical & Petroleum Engineers, Inc.

("Flow of Bulk Solids Progress Report," Bulletin No. 96, is available for $1.00 from Utah Engineering Experiment Station, University of Utah, Salt Lake City 12, Utah.)

For instant coffee . . .

Hermetically sealed bins aid quality control

S. A. Schonbrunn & Company, Inc., Palisades Park, N.J., claims for its new Savarin Instant Coffee that it "tastes like it came from a coffee pot."

To help make good this claim, company "seals" the product in portable Tote Bins immediately after spray drying and releases it only at the packaging stage.

By using this system, laboratory personnel are sure that the six or eight tests per Bin-load, taken when the powders are ejected from the spray dryer, remain accurate throughout the entire subsequent processing and storage operation.

No moisture pickup can occur in the sealed containers. Further, intermixture of batches is possible.

Here's way it works

After spray drying, a 74-cu-ft aluminum Tote Bin receives the finished product from the collector. Samples are taken during this filling process.

After Bin is filled (somewhat under 1000 lb), it is conveyed by fork lift to storage in a dehumidified area. This compact storage room also serves as discharge area for the powders.

Some of Schonbrunn's 20 Tote Bins are shown discharging on dual-Tilt platform. Others are double-tiered along wall

To discharge, Bins are placed on the Tilt platform by fork truck. Button-operated air cylinders, beneath the Tote Tilt tongue, raise Tilt and Bin to discharge position, while leg clamps automatically seal the Bin against the gasketed, dust-tight stationary-hopper Tilt.

An opening in front of Tilt enables a company employee to open discharge door of the Bin, and the powdered coffee cascades into feeder-hoppers a floor below, which serve the packaging line.

When emptied, Bin is easily removed and a full one put in its place. Complete operation, from collection of product, through lab analysis during storage to discharge into filling, takes from one hr to 48, depending upon packaging operations.

Only exception to this rapid turnover occurs weekends, when drying takes place, but no packaging lines are in operation. The powders then are stored, safely, until Monday.

Although the company now uses the system totally in-plant, it could expand into an interplant operation should product development call for it.

Also, other materials could be handled in the Bins, should it be decided to introduce a new product or handle other existing products.

(Tote Bins and Tote Tilts are manufactured by Tote System, Inc., 680 S. Seventh St., Beatrice, Nebr.)

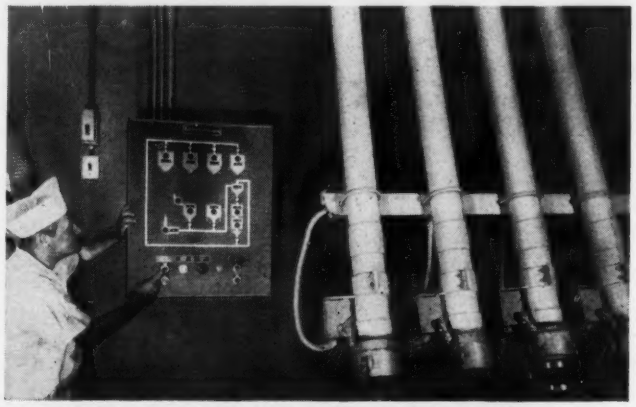
For more information circle 5094 on Reader Service Slip.

Practical primer on pressure conveying

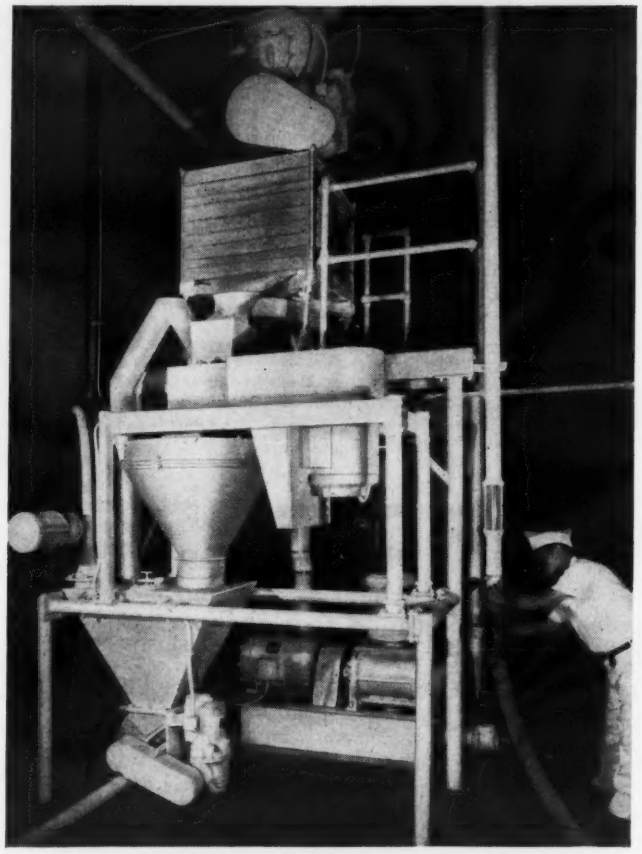
Illustrated technical bulletin presents major components of "Pneu-Flo" positive pressure pneumatic conveying system, widely used in flour and feed mills and food plants.

Components include positive displacement blower with intake filter, blow-through airlock feeder, airlock-manifold combination, collector and the

(*Continued on next page*)



Central Control Panel of Jewel Tea's flour-handling system. At right are main conveying lines—each to a separate bin.



FULLER

Pneumatic Conveying System Provides Low Cost, Sanitary Flour Handling Method For New Jewel Tea Co., Inc. Bakery

Automation . . . at the new Jewel Tea Company bakery in Melrose Park, Ill., . . . means baking more than four tons of bread an hour under the highest standards of sanitation, at the lowest possible production cost. A Fuller-engineered *pneumatic* flour-conveying system helps make this record performance possible.

This automatic, smooth running pneumatic conveying system is controlled by one man and a centrally located push-button control panel. By making a simple connection, turning a switch and pressing a button, the operator empties 100,000 lb. GACX Airslide carloads, of bulk flour, into storage bins. Other buttons send the flour through predetermined cycles of sifting, weighing, mixing — in dust-tight, self-cleaning pneumatic lines.

Compact, flexible, easy-to-install Fuller pneumatic conveying systems are *integrated* into your plant processed by Fuller specialists. Write or phone today outlining objectives such as capacity, distance and material to be handled. Fuller engineers will gladly furnish additional information and make appropriate recommendations.

1308
A-273

FULLER COMPANY
GENERAL AMERICAN
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pioneers in harnessing AIR

FULLER COMPANY
176 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
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Los Angeles • San Francisco • Seattle

5095 on Reader Service Slip.

MATERIAL HANDLING

(*Continued from preceding page*)

conveyor piping to storage bins and processes.

Special series of schematic drawings illustrates the various diverter valve types available.

Included is a table for determining horsepower and line size needed for systems ranging in capacity from 1000 to 60,000 lb per hr.

Information in table is based on handling of soft feed ingredients, and powdery foodstuffs not exceeding 50 lb per cu ft bulk density.

(Bul 208-A, "Pneu-Flo Positive Pressure Pneumatic Conveying System," four pp, is available from Sprout, Waldron & Co., Inc., 130 Logan St., Muncy, Pa.)

For more information circle 5096 on Reader Service Slip.

Eliminate warehousing

(*Continued from page 45*)

items, and the warehousing cost should experience a major reduction.

A rough calculation indicates that a $25 million wholesale grocery operation might save $3 million in working capital and $150,000 yearly in interest burden alone.

This should definitely lower consumer prices, while increasing both wholesaler and retailer profits. It should also eliminate manufacturers' "order takers" for the 600 items (100 "A" items and 500 "B" items) which might better be purchased at executive levels on a scheduled basis.

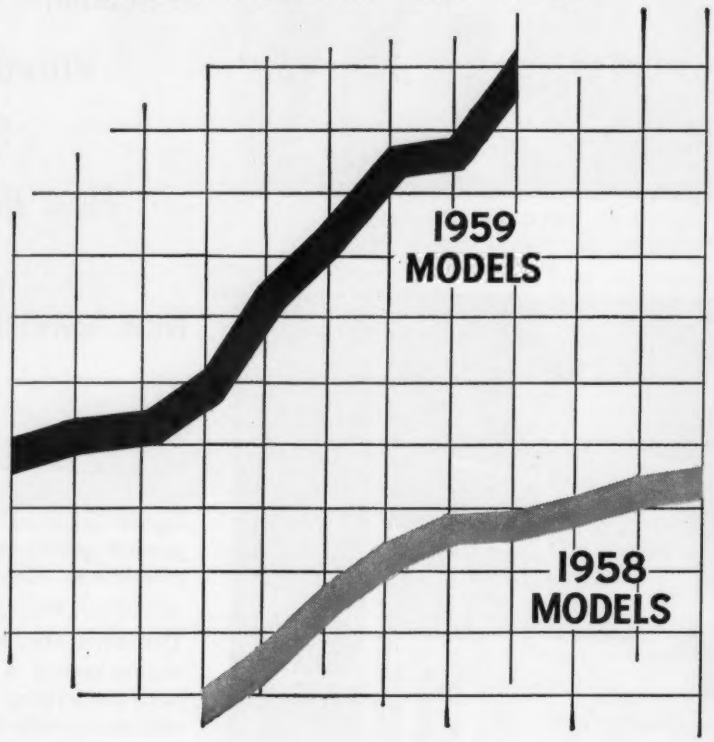
All items must be classified according to individual retailers so as to avoid the mix-up which might occur in marginal products which may be "C" items for the small retailers and "B" items for the larger supermarkets.

Since "A" and "B" items together might constitute even more than 75 per cent by value and even a greater per cent by number of units handled, a really modern grocery warehouse should look just as different from current warehouses as the newer system will look in comparison with the one which it may replace.

END

The BIG SUCCESS

1959 FORD SUPER DUTY TRUCK SALES MORE THAN DOUBLE THOSE OF LAST YEAR



1960 FORD SUPER DUTIES

SKYROCKETING SALES OFFER ADDED TESTIMONY TO THE TOUGHNESS AND RELIABILITY OF FORD "BIG V'S"— *NOW THEY'RE MORE DURABLE, MORE FLEXIBLE THAN EVER!*

Ford's increase in sales of Super Duty Trucks, while impressive in itself, by no means tells the whole story. Over half of the 1959 unit sales were the result of repeat orders from operators like Trucking Contractors, Inc., who bought because the Ford "Big V" provided the kind of performance and durability needed for their work.

And for 1960, the Ford Super Duties offer additional refinements designed to provide an even greater degree of dependability. Bigger optional axles and increased GVW's permit greater payloads and more profitable operation. Automatic radiator shutters to keep the engine temperatures within the most efficient operating range, submerged-type electric fuel pump to prevent vapor lock, and redesigned wiring for longer, more dependable operation are but a few of the improvements which add to the performance and durability of these units.

The changes offered for 1960 were tested and evaluated by America's foremost independent automotive research organization. The certified results of the studies by this impartial firm (name available on request) provide proof that Ford's Super Duty Trucks are even more dependable.

- **Certified Durability through closer temperature control!** Independent research engineers certify that Ford's thermostatically controlled radiator shutters kept water temperature between 168° and 188° in severe mountain grade operation. The test truck with shutters blocked open

of the Big Truck Field

"Tried 8 in '58—bought 20 more in 1959," says Curtis E. Brost, President, Trucking Contractors, Inc. "In 1958 we bought 8 Ford T-850's with lightweight chassis options and specially built 5-batch bodies which gave us a full extra batch per truck. A 5-batch load is a real strain on the truck when you consider we're 'running the ditches' on this highway paving job in North Dakota. These T-850's worked out so well that we ordered 20 more in '59. Our Ford Tandems with the 477 engine give us good mileage and the drivers are real happy with them. It's a rough go on trucks with soft footing and dust so bad we have to drive with headlights on. Despite such operating conditions, downtime has been negligible and these '477' Fords have given us less trouble than other trucks we have operated."

with Certified Durability

under same operating conditions had a temperature range from 102° to 181°. The temperature variation of only 20° with shutters means less expansion and contraction in engine block and cylinder heads. Higher temperatures with radiator shutters permit leaner fuel-air mixtures with less possibility of raw gas washing down cylinder walls. Warm oil circulates more freely, reducing internal friction. All these factors contribute to longer engine life.

- **Certified Dependability with longer-lived electrical system!** Ford's '60 improved wiring harness and the 1959 wiring harness were subjected to shaker table tests plus constant exposure to oil and water vapors and temperatures of 200°. Certified results prove that the greater resistance to deterioration by heat, oil, water and abrasion obtained with the 1960 wiring harness more than doubles wiring harness life.

- **Certified Reliability with Ford's submerged-type electric fuel pump!** Dynamometer tests of engines with submerged-type electric fuel pump and conventional mechanical type showed that vapor lock was nonexistent with Ford's electric pumps at temperatures up to 200°, whereas incipient vapor lock with mechanical pump resulted in a power loss of 9% at an underhood temperature of 200°.

Test results like these plus the experience of satisfied users are important but that is not all. For 1960, the Super Duty line has been broadened to provide even more flexibility in power train options. Get the facts from your Ford Dealer!

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . BUILT TO LAST LONGER, TOO!

5097 on Reader Service Slip.

fp TRANSPORTATION

Stainless safety brake uses the now-wasted power of exhaust gases to

- **save wear-and-tear on air brakes, engine parts**
- **stop heaviest payload if air brakes fail**

Unusual braking device which is completely independent of any installed braking system markedly reduces operating and maintenance costs of over-the-road trucks.

More important to operator safety, the brake also acts on command with remarkable force to *smoothly* and *rapidly* decelerate massive payloads.

Unit magnifies the natural braking force of any powerplant

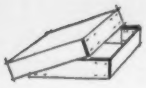
Already in daily service on Western truck fleets hauling through such rugged terrain as the Donner Pass, the exhaust brake is basically a butterfly valve and a shaft of stainless steel, in a housing bolted directly to a stainless steel manifold outlet.

When thus installed on the manifold, the compression brake converts each cylinder in the powerplant into an individual low-pressure (40-50 psi) air compressor. As long as the engine turns over, each cylinder continues its positive braking action.

Maximum magnitude of braking force is determined by position of the butterfly valve. This, in turn, is controlled by a hand-lever in cab.

However, the hand-lever setting may be automatically "overridden" simply by pressing down on foot throttle and accelerating engine. A manual cutoff also is provided.

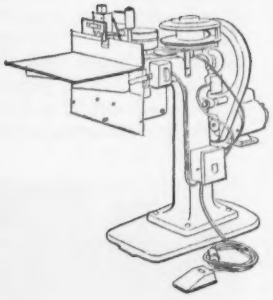
(*Continued on next page*)



CLOSURE IDEA BULLETIN

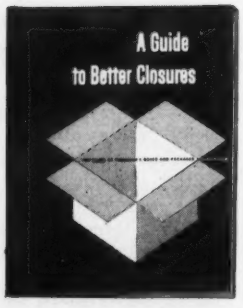
For Users of Fibreboard Boxes

Box components--liners and corrugated media--are all fastened together with the positive clinch provided by wire stitching... clinches all flaps, too...especially important for boxes with wax, lacquer, or other special finishes.



600 full overlap boxes per shift are easily loaded and closed by one man with the HOHT Silverstitcher...can just as easily and effectively close 5-panel folders, and telescope boxes. W1-4 gives full details.

Free booklet, "A Guide To Better Closures" ...an impartial report on glue, tape, staple and wire stitching closure methods ...points the way toward greater savings, superior product protection...send for your free copy today.



Color comes to wire stitching...increases sales appeal of package. Acme Steel Colorstitch Stitching Wire is chip resistant ...available in a choice of 10 standard colors...normally available in 10 lb. coils...25 and 50 lb. coils available on special order. Colorstitch size available from stock is .103" x .020"...other sizes on order. AD-152 gives complete information.

Your Acme Idea Man is thoroughly trained in fibreboard box closure. His know-how is backed by the 75 years Acme Steel has helped industry solve closure problems. Write Dept. FGW-109, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois, for information on the complete line of Acme Steel box, book and metal stitchers.

ACME STEEL WIRE STITCHING

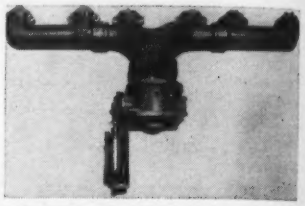
5098 on Reader Service Slip.

transportation

(*Continued from preceding page*)

What really happens

When descending a long grade, with hand lever in "on" position, operator actuates the brake by releasing foot throttle pressure. Automatically, the stainless butterfly valve closes against baffle.



Because even minor manifold leaks cannot be tolerated, manifold also is of stainless steel

On each succeeding exhaust stroke, the engine builds up back-pressure within the stainless steel manifold. This pressure build-up exerts a braking influence against the combined areas of the piston heads.

The effort required to turn the engine against this combined back-pressure, plus normal engine friction, creates a retarding effect at the wheels equal to hp output.

Operating savings

New, independent braking system allows air brakes to be "saved" for complete stops, or when driving in traffic — conserving air pressure and reducing system wear and tear.

The pressure maintained on pistons during deceleration with the exhaust brake in operation also eases wear and tear on bearings, rods, wrist pins and bearing cap bolts by keeping pistons and connecting rods always forced toward the crankshaft.

By pressurizing cylinders on deceleration, oil consumption also is reduced on downgrades.

(Stainless steel compression braking device is manufactured by Power Brake Equipment Company, 1632 E. 11th St., Portland, Ore.)

For more information circle 5099 on Reader Service Slip.

Stable, odorless, neutral flavor fish flour . . .

developed for protein deficient nations, may find use as US protein fortifier

RESEARCH on the prevalence of protein malnutrition in many parts of the world has led to the development of a high protein, edible fish flour which is equivalent in biological value to animal muscle and milk.

It keeps well and can be incorporated into local foods and dishes without much difficulty. It can be made to retain a fish flavor for those areas of the world where this makes the protein more acceptable, or it can be deodorized for consumption in those areas where a neutral taste is required.

In many instances, complete deodorization is not necessary. The primary aim in processing the raw fish is to prevent reversion of the fish flavor and to deodorize to the point that ten per cent of the flour will not be detectable when added to any food.

Development may have application as a protein fortifier in the United States.

Odorless fish flour with a neutral taste is now being manufactured for domestic consumption from fish fillets. It may find use in bread, pasta, cakes, pastries, etc. It can also be added to soups, gravies, sauces and other foodstuffs.

This domestic fish flour is 90 per cent protein and is priced at less than milk protein lactalbumin to which it can be compared nutritionally. Comparisons of this fish flour with other protein sources is shown in table below.

High protein fish flour, which is perfectly stable and does not develop off odors and taste in storage, will be priced at approximately 65c per pound in ton quantities.

(Deodorized fish flour made from whole fish, manufactured only for export, is a much less costly product. It is sold at 20c a pound, with each pound representing five pounds of fish.)

(Stable, odorless, neutral flavor fish flour is a development of VioBin Corporation, 226 W. Livingston, Monticello, Ill.)

For more information circle 5100.

Comparison of fish flour with other protein sources:

	Fresh Egg	Dried Egg	Meat	Fresh Milk	Dried Milk	Fresh Fish	Dried and Smoked Fish	Fish Flour
Stability (without refrigeration)	1	4	1	1	7	1	6	10
Availability	1	1	1	1	5	2	3	10
Consumer Acceptance	10	10	10	10	10	10	10	10
Quantity of Protein Per Unit Cost	1	1	1	1	3	1	3	10

Above table serves to compare the various available protein sources with fish flour.

Numbers are used to assign estimated values to these protein sources for purposes of comparison. The number 1, for example, indicates the lowest value, while 10 indicates the highest value in the four categories of comparison.

Stability (without refrigeration) means the type of refrigeration found in the average home. From the table, it may be seen that while dried milk does have a certain amount of stability, as do dried and smoked fish, stability is not nearly as great as that of fish flour.

Availability may be considered as the same type of comparison.

Regarding consumer acceptance, it is relatively safe to assume that the majority of consumers would eat all of the various foods listed. Fish flour, however, would have a higher consumer acceptance because it is introduced into products without detection. Therefore, it would be accepted by all consumers who eat any of the foods in which it is used.

Quantity of protein per unit cost simply means that while dried milk and dried and smoked fish provide good quality protein at less cost than those marked No. 1, the cost is still far greater than the cost of fish flour.

✓CHECK LIST FOR "PRODUCTS WITH A PURPOSE"

. . . whether for a new product . . . an improved product . . . or in the development of a theory . . . we invite you to check any or all of these items for specific information on how they can be utilized to your advantage.

- ☐ Entrapped Powdered Flavors
- ☐ Butter Flavor Specialties
- ☐ Certified Food Colors
- ☐ Imitation Chocolate Flavors
- ☐ Coffee Flavor Specialties
- ☐ Concentrated Citrus Oils
- ☐ Coumarin Replacements
- ☐ True Fruit Flavors
- ☐ Imitation Fruit Flavors
- ☐ Maple Flavor Specialties
- ☐ Spicearomes
- ☐ Natural & Imitation Spice Oils
- ☐ Pure Vanilla Concentrates
- ☐ Imitation Vanilla Concentrates
- ☐ Worcestershire & other Sauce Bases

Florasynth LABORATORIES, INC

EXECUTIVE OFFICES: 900 VAN NEST AVE., (BOX 12) NEW YORK 62, N. Y

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5101 on Reader Service Slip.

Attention cereal makers:

Here's how Tora Food® can give you a new sales-building nutrition story at low cost

If you need a powerful new story to spark the sales of your cereal, Tora Food (Red Star's brand name for Torula Yeast U.S.P.) is your answer. And you can actually *save* money. Here's what we mean:

How will Tora Food improve nutritional content of cereal? Here are some specific nutritional factors housewives know and look for in cereal. This chart shows you how Red Star Tora Food increases these factors in a typical cereal—corn meal.

PER 100 GRAMS OF CORN MEAL	Corn meal as is	Corn meal plus 3% Tora Food
Protein	9.00 grams	10.50 grams
Vitamin B_1	0.30 milligram	0.66 milligram
Vitamin B_2	0.08 milligram	0.20 milligram
Niacin	1.90 milligrams	2.80 milligrams

What totally will Tora Food add to cereal?
(At a level of 3# to 100#)

Vitamin B_1	163.5 milligrams worth
Vitamin B_2	54.5 milligrams worth
Niacin	408.6 milligrams worth
Vitamin B_6	40.8 milligrams worth
Para-amino benzoic Acid	20.4 milligrams worth
Pantothenic Acid	150.0 milligrams worth
Folic Acid	95.3 milligrams worth
Choline	4.8 grams worth
Inositol	5.4 grams worth
High quality Protein	1.5 lbs.

Here is a nutritional "barrage" that can't help but impress the nutrition-conscious housewife.

How can Tora Food actually save you money? The ingredients listed above would cost you 87.33¢ at current price levels, if you bought them individually. You get these *same* ingredients in the *same* amounts for only 54¢ in Red Star Tora Food. That's 33.33¢ saved. (Incidentally, the same amount of brewer's yeast would cost you between 72¢ and 84¢.)

In addition, Tora Food saves you money on handling and inventories. Instead of buying, storing, handling and keeping books on 10 or more different ingredients, you need handle only *one* when you use Red Star Tora Food.

How else will Tora Food improve saleability of cereal? Tora Food will intensify the flavor of your cereal. It has a mild, pleasant flavor with the ability to enhance the natural flavor of the product to which it is added.

Furthermore, Tora Food is an antioxidant and helps give your cereal longer shelf life.

Who besides cereal makers can use Tora Food? Almost any food processor. Here we've talked specifically about cereal makers, but baby food processors are already using Red Star Tora Food successfully. And here are some other types of processors who can use Tora Food to big advantage: spice, soup, chocolate, peanut butter, sauce and gravy, health food, smoked yeast and pharmaceuticals.

If you are a cereal maker (or *any* food processor) who wants a new sales-boosting nutrition story, write to us. We'll be happy to show and discuss with you work and analysis that has been done. Or if you prefer, we'll be happy to have a nutritionist call on you. Write to the address below.

Nutritional Division

RED STAR YEAST & PRODUCTS CO.

Milwaukee 1, Wisconsin

5102 on Reader Service Slip.

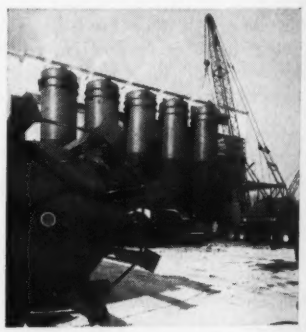
ingredients

new source for citric acid

Food processors have a new source of supply for citric acid available this fall from Miles Chemical Company, Elkhart, Ind. Long experienced in production of citric acid for their own product use, Miles' $3.6 million production expansion is expected to surpass 15 million pounds of citric acid annually.

Product is produced by a submerged fermentation process, developed by Miles, whereby air blows through large tanks in which mold grows on a sugar solution. Process is similar to the submerged fermentation process used for antibiotic production.

Several of the 12 new fermentators, added to citric acid production facilities by Miles Chemical Company, are shown in view below. Fermentators will produce large quantities of citric acid used in the bottling and beverage, candy and other food fields to impart taste



Vegetable bouillon adds meaty flavor

All vegetable bouillon gives a meaty flavor to sauces, gravies, soup bases and other food products. It is presently being used in the manufacture of soup mixes for vending machines.

Bouillon may be used as a dry mix or it will dissolve quickly in hot water. As an ingredient in dry vending soup mixes, it flows freely, doesn't clog, retains meaty flavor and dissolves instantly even after

exposure for 72 hours or more.

Low calorie product contains nutritive amino acids, vitamin B complex factors and other protein derivatives.

It is available in four basic formulations (with or without natural hickory smoked flavoring), and three different grinds. Make request for free sample and specification sheet on company letterhead.

(Vico Vegetable Bouillon is a product of Vico Products Co., 415 W. Scott St., Chicago 10, Illinois.)

For more information circle 5103 on Reader Service Slip.

Booklet describes use of AMIF sausage starter culture

Some of the questions concerning the use of the AMIF starter culture (*Pediococcus cerevisiae*) have been compiled with the answers in a 25-page circular No. 41.

The starter culture, commercially available from Merck & Co. as ACCEL, was developed by the foundation to demonstrate the usefulness of cultures in the manufacture of a variety of fermented sausage products.

A limited number of copies are available by writing directly to the American Meat Institute Foundation at 939 E. 57th St., Chicago 37, Ill.

Offers Bavarian cream flavor

A Bavarian cream flavor has been developed for flavoring fondants, caramels, toffees, chocolates, powdered cake icings, puddings and ice cream mixes.

Available either in liquid or spray-dried form, this flavor lends a smoother, richer, creamier effect to confections, bakery foods and ice creams.

(Aromalok® Bavarian cream flavor is a product of Fritzsche Brothers, Inc., 76 Ninth Ave., New York 11, N. Y.)

For more information circle 5104 on Reader Service Slip.

Staley Quality Improvement Pointers:

in flavor, body, color, profits...

Sweetose makes the difference! Here's why!

In combination fruit juice drinks, Sweetose blends and enhances the natural flavors and colors of fruits.

In canned fruit sauces, Sweetose holds appetizing natural color. Enhances that just-picked flavor with balanced sweetness.

Sweetose, the original enzyme-converted corn syrup, brings out true fruit flavor . . . gives a brighter, richer, more appetizing appearance that wins sales!

Whether you pack jams and jellies, fruit juice drinks, or fruits and berries, remember this: bland, crystal-clear Sweetose Corn Syrup gives balanced sweetness control—never masks a flavor no matter how delicate.

Strawberries taste like real strawberries, grapes like real grapes, peaches like real peaches, for Sweetose holds natural "fresh-picked" flavor! Captures true fruit colors at their peak. Improves appearance, body and texture in a wide variety of fruit products.

Look into the many advantages of Sweetose today. For more information on how Sweetose can impart customer-winning characteristics to your products at *definitely lower sweetener costs*, see your Staley Representative at the branch office nearest you, or write:

A. E. STALEY MFG. CO., DECATUR, ILLINOIS

Branch Offices: Atlanta • Boston • Chicago • Cleveland
Kansas City • New York • Philadelphia • San Francisco • St. Louis

Sweetose®
THE ORIGINAL ENZYME-CONVERTED CORN SYRUP

5105 on Reader Service Slip.

The case of the dry milk that kept soup cans from going ping pop ping

Heat-loving spores were the problem. They laughed at the high temperatures that were to make sterile soups sterile. And went on multiplying, multiplying, multiplying.

Result: Something had to give. And did. The soup cans bulged, *ping pop ping!*

The solution called for an ingredient change, the use of a special dry milk with a heat-loving spore count next to zero. But could such a dry milk be produced?

Land O' Lakes chemists, who take to a challenge as the Irish take to tenors, declared a full-fledged field day. They literally "engineered" a new *kind* of dry milk that met this very special need.

Result: These same sterile soups are now horribly shy and retiring, never go ping pop ping.

But, boy, do they *taste* good!

You, too, may process a product that can benefit from one or more of our dry milks. If we haven't the precise one you need, we can *create* it. Write us. Land O'Lakes Creameries, Inc., Dept. DM-2, Minneapolis 13, Minnesota.

Land O'Lakes® Dry Milks

"Engineered" to fit your product

5106 on Reader Service Slip.

Formulations for fruit pie fillings with pre-cooked starch

A series of 10 product information sheets describe a pre-cooked starch for use in fruit pie fillings as well as provide formulations for thickening apple, blueberry, cherry, peach, rhubarb and strawberry pies.

Recommended application is for cold, juice-water, instant pie fillings which require no cooking time.

Created for the baking industry, ingredient is an extremely bland, cold-water-soluble, tapioca-based, pre-cooked starch with excellent gel characteristics and smooth texture, having no cereal or starch flavor.

As a thickener, it yields very translucent solutions which are acid compatible and has no effect on fruit color.

Pies made with the starch may be frozen prior to baking with no detrimental effects to texture, viscosity, consistency, mouth-feel or taste of the final baked product.

(Ten product information sheets on Redisol #4, a pre-cooked, cold-water-soluble starch thickener, are available from Morningstar-Paisley, Inc., 630 W. 51st St., New York 19, N. Y.)

For your copies simply circle 5107 on Reader Service Slip.

Tells all about lemons

Information about lemons is covered in a 28-page booklet. Included is how and where lemons are grown, their historical background, how they are processed and their various uses.

Also provided is a discussion of lemon beverage flavors and the different types of lemon soft drinks. Booklet contains numerous illustrations and photographs.

("Lemon Booklet" may be obtained from Hurty-Peck & Co., 1423 Naomi St., Indianapolis 7, Ind.)

For your copy simply circle 5108 on Reader Service Slip.

Improve cell wall control in yeast-raised foods

How to improve cell wall control in all yeast-raised foods, through the use of a new softener, is discussion of 12-page bulletin.

Ingredient, for use in breads, rolls, and all other yeast-raised bakery products, is made from selected edible fats. It is a white, creamy product, having controlled plasticity which permits complete dispersion in dough.

It may be added to sponge or at dough stage along with shortening, milk and other ingredients. It needs no premixing or blending with other materials and no special mixing procedures are necessary.

Bulletin explains development of softener as well as illustrating and providing recommendations for use.

("Atmul 500 The Revolutionary Baking Ingredient That Gives You Cell Wall Control," 12-page bul, is available from Food Industry Dept., Chemicals Div., Atlas Powder Co., Wilmington 99, Del.)

For more information circle 5109 on Reader Service Slip.

Antioxidants for edible animal fats

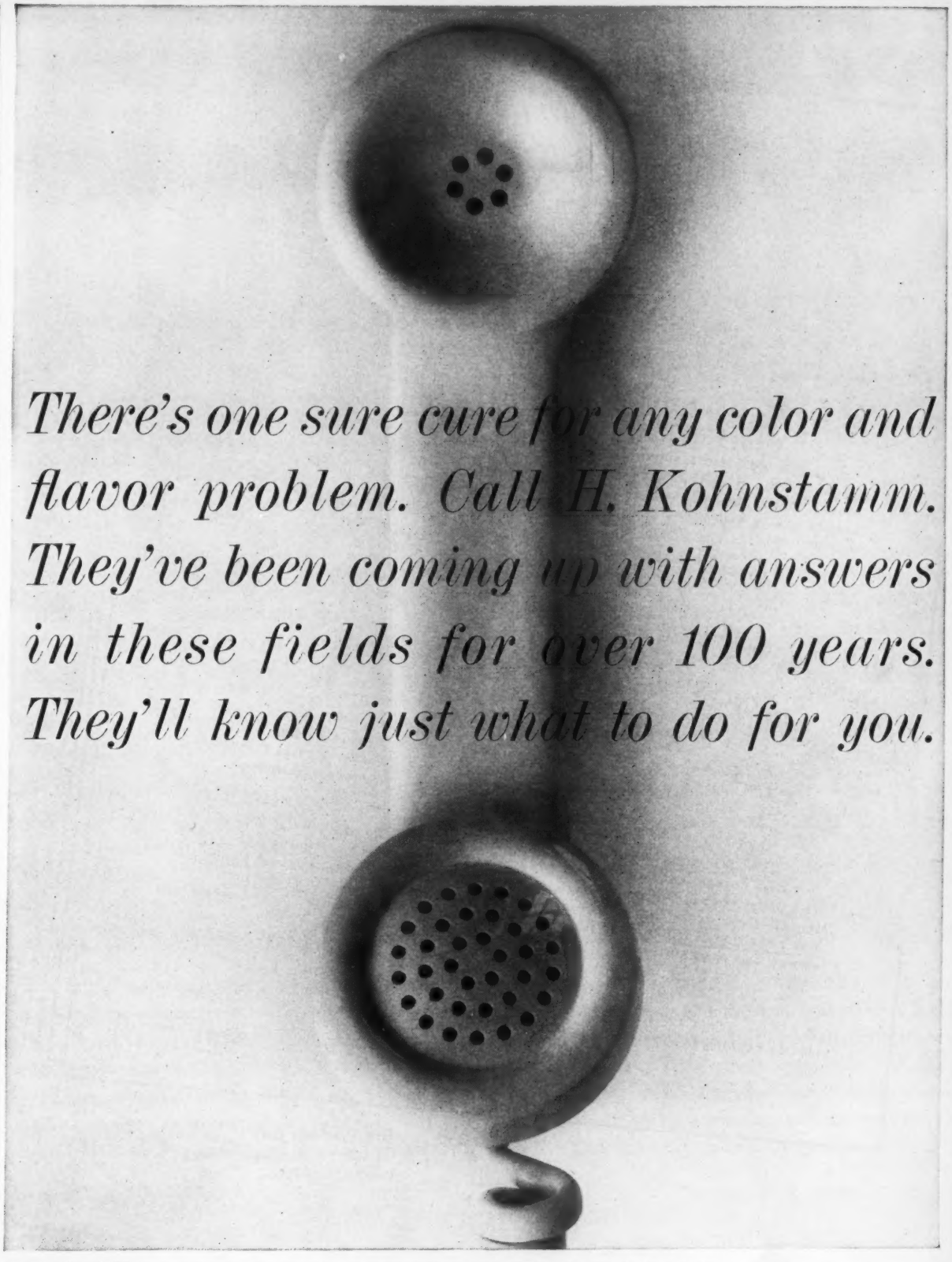
Several antioxidants for edible animal fats are covered in 12-page bulletin. Bulletin discusses function of antioxidants, food-grade antioxidants and the selection of antioxidants for edible animal fat stabilization.

Composition and properties of the antioxidants are listed as well as typical effect of formulations on keeping quality of various animal fats and fat-containing foods.

Ruling on USDA labeling requirements for foods containing antioxidants is also included.

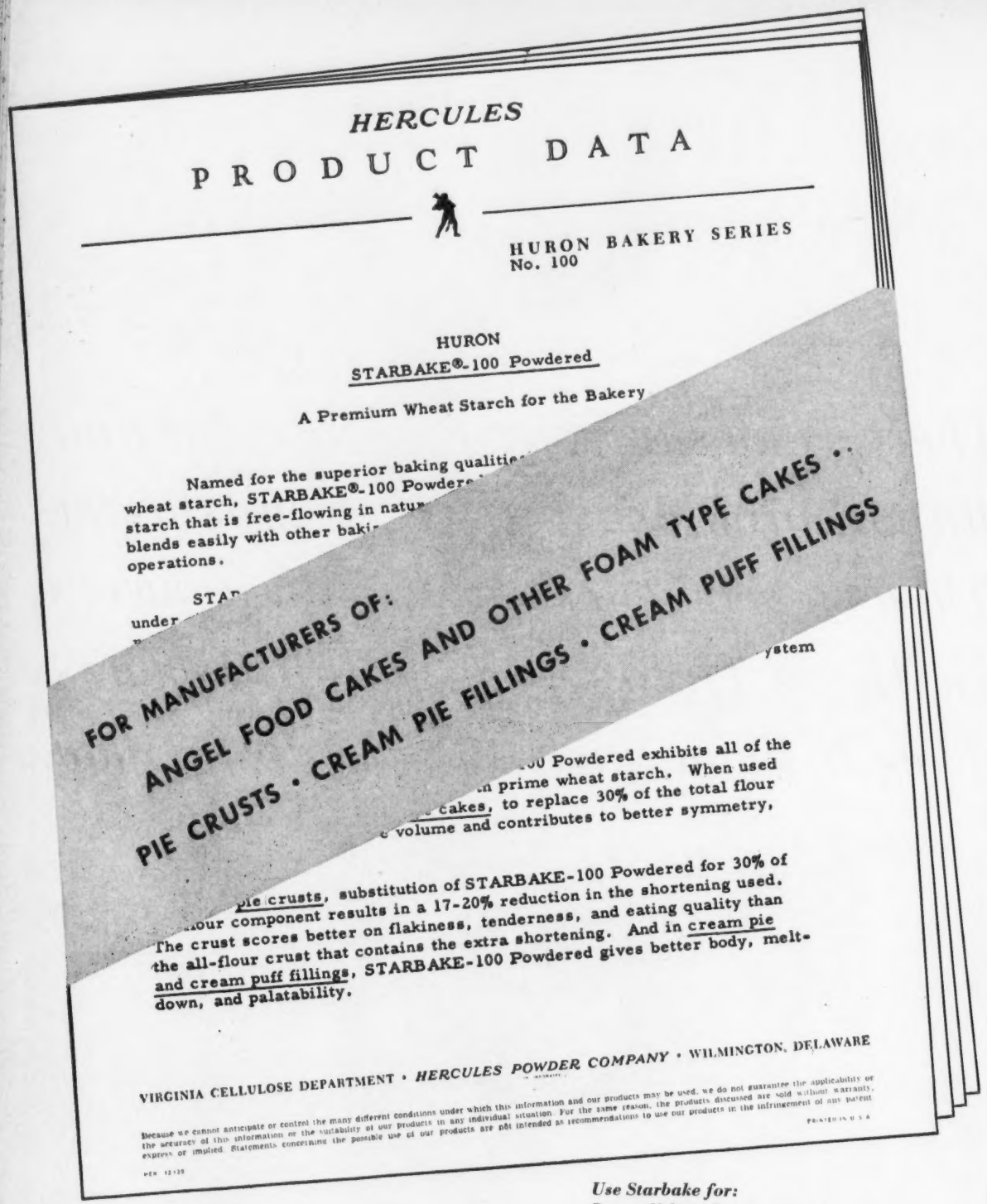
("Tenox Antioxidants for Edible Animal Fats", Bul G-105, is available from Eastman Chemical Products, Inc., Subsidiary of Eastman Kodak Company, Kingsport, Tenn.)

For more information circle 5110 on Reader Service Slip.


There's one sure cure for any color and flavor problem. Call H. Kohnstamm. They've been coming up with answers in these fields for over 100 years. They'll know just what to do for you.

First producers of certified colors **H. KOHNSTAMM & COMPANY, INC.** Established 1851
161 Avenue of the Americas, New York 13, WAtkins 9-7000 / 11-13 E. Illinois St., Chicago 11, SUperior 7-6174
2632 E. 54 St., Huntington Pk., Calif., LUdlow 5-1226 / in other cities consult the "Yellow Pages"

5111 on Reader Service Slip.


HERCULES
PRODUCT DATA
HURON BAKERY SERIES
No. 100
HURON
STARBAKE®-100 Powdered
A Premium Wheat Starch for the Bakery
FOR MANUFACTURERS OF:
ANGEL FOOD CAKES AND OTHER FOAM TYPE CAKES
PIE CRUSTS • CREAM PIE FILLINGS • CREAM PUFF FILLINGS
VIRGINIA CELLULOSE DEPARTMENT • HERCULES POWDER COMPANY • WILMINGTON, DELAWARE

Use Starbake for:
Greater Volume Improvement
Longer Shelf Life

Huron Milling Division, Virginia Cellulose Department
HERCULES POWDER COMPANY
INCORPORATED
900 Market Street, Wilmington 99, Delaware

VH59-6

5112 on Reader Service Slip.

ingredients

Enzyme applications in fermentation

The enzyme approach to fermentation reactions is subject of 4-page publication, one in a series of scientific articles published for the past ten years.

Article describes how enzymes are rapidly becoming important in replacing classical fermentation methods, and how fermentation is being used as a method of producing enzymes.

These new approaches are discussed as having future significance in the production of beer, whiskey, wine, vinegar, antibiotics, steroids and other products.

("Understudy for a Microbe", an article published in *Research Comments*, may be obtained from Evans Research and Development Corporation, Development Department, 250 E. 43rd St., New York 17, New York.)

For more information circle 5113 on Reader Service Slip.

Tenderizer also flavors meats

Liquid form meat tenderizer, which also adds flavor to product, is now approved, with certain limitations, for use in establishments operating under Federal Inspection.

One gallon of tenderizer-seasoning, diluted with water before using, will tenderize and season several hundred pounds of meat.

It is furnished in several strengths, depending upon application. It may also be had with sodium benzoate added for use in those states where use of sodium benzoate is permitted.

Tenderizing action remains constant unless meat products which have been treated with it are frozen at temperatures of 0 F or lower. Freezing causes enzymes to become inactive, but does not destroy them.

When meat is thawed, enzymes once more become active and will remain active until meat is cooked. Cooking

temperatures of 145 F or higher will destroy enzymatic action completely.

Product contains MSG and a mild blend of seasoning to flavor meats. It is packed in gallon glass jugs or in 50-gallon, paraffined oak barrels.

For firms who prefer, it is also available in a dry or powdered form.

(Brookwood Steak Seasoning and Tenderizer is a product of Basic Food Materials Incorporated, Vermillion, Ohio.)

For more information circle 5114 on Reader Service Slip.

Food-grade antioxidants

Line of food-grade antioxidants for baked foods, candy, cereals, emulsifiers, essential oils, fried foods, lard, nuts, peanut butter, potato chips, vegetable oils, etc. is subject of 4-page bulletin.

Chemical composition, typical properties and approximate solubility in various mediums are given. Bulletin information is conveniently arranged in table form.

("The Eastman Family of Tenox Food-grade Antioxidants", Bul G-108, is available from Eastman Chemical Products, Inc., Subsidiary of Eastman Kodak Company, Kingsport, Tenn.)

For more information circle 5115 on Reader Service Slip.

Gelatin dissolves in 15 sec at 170 F

A very fast dissolving gelatin has been developed for the ice cream industry where ice cream mix is pasteurized at high temperatures for short periods.

Gelatin will dissolve in 15 seconds at 170 F. It has a high resistance to break-down and is excellent in restraining heat shock and shrinkage.

(Quick-Prep Dairy Gelatin was developed by J. O. Whitten Company, Inc., 134 Cross St., Winchester, Mass.)

For more information circle 5116 on Reader Service Slip.

You don't have to consult a French chef for the secret of making a good food product taste better. Simply start using Merck MSG. Merck is your new basic source for this flavor-enhancing ingredient. Merck's technically advanced manufacturing process assures dependable delivery in the quantities you require. Rigid quality-control procedures provide lot-to-lot uniformity of monosodium glutamate 99+% pure. And Merck's Food Research and Technical Service Staff stands ready to help you at all times. Get complete information on how Merck MSG can add the gourmet's touch to your products by contacting your nearest Merck Sales Office or writing directly to Rahway.

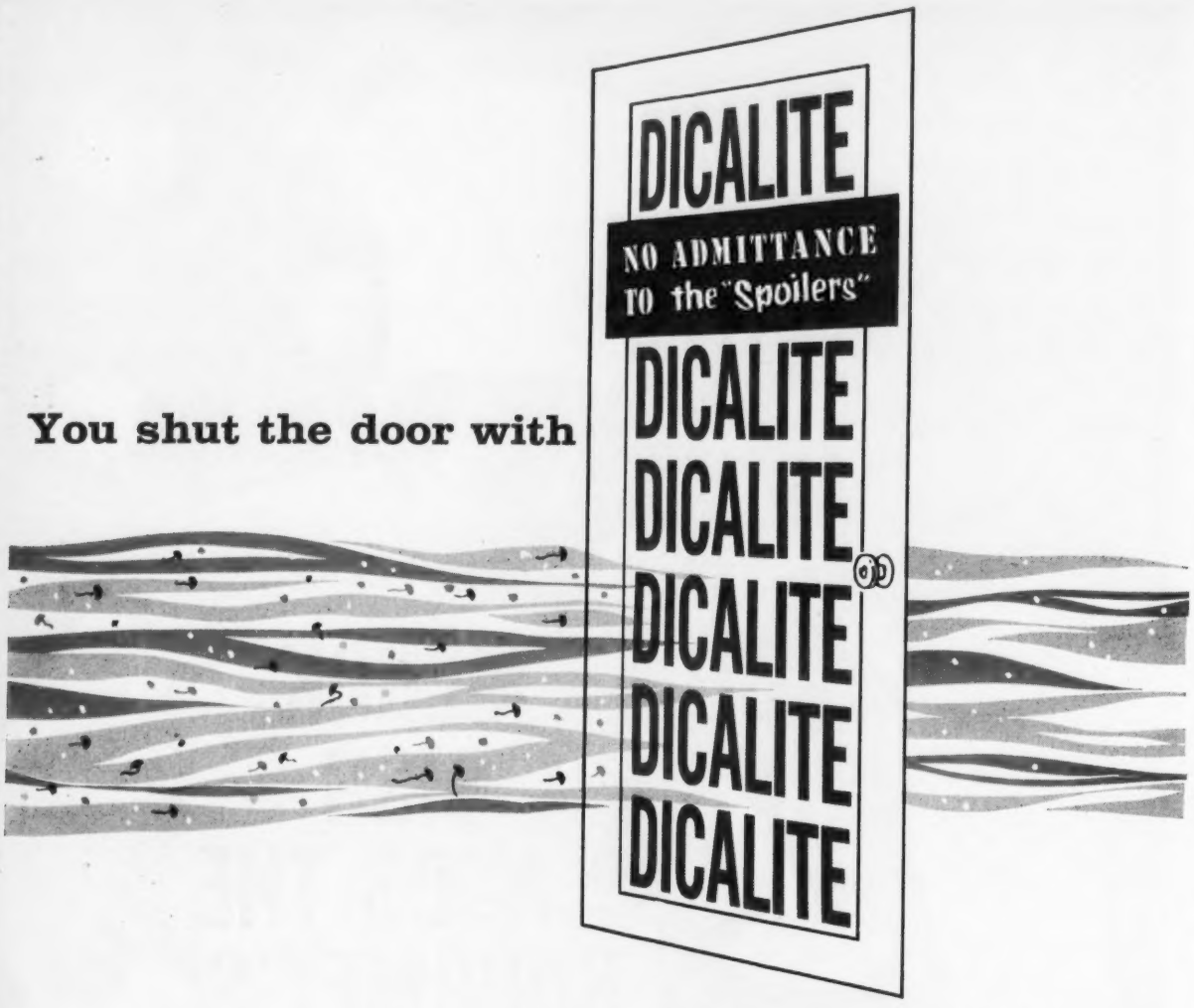
MSG — a product of MERCK

MERCK & CO., INC., RAHWAY, NEW JERSEY

© Merck & Co., Inc.

5117 on Reader Service Slip.

You shut the door with



One of the greatest safeguards of purity in the processing of many foods is filtration with Dicalite Filteraids. Dicalite filtration is so 'sharp' that it gives practically complete removal of micro-organisms – thermophilic bacteria, bacillus coli, amoebae and the spores of molds and fungi – all the food spoilers which plague food processors.

And CLARITY, too!

With that exceptional purity you also get unexcelled clarity for maximum eye-appeal to your customers . . . an unbeatable combination of advantages. And there is a complete family of Dicalite Filteraids to insure both clarity and purity in your food product – at economically fast flowrates through the filter to maintain optimum production.

The most practical way to assure clarity and purity is to filter with...

Dependable GLC GREAT LAKES **Dicalite® FILTERAIDS**

DICALITE DEPARTMENT, GREAT LAKES CARBON CORPORATION
612 SOUTH FLOWER STREET, LOS ANGELES 17, CALIFORNIA

5118 on Reader Service Slip.

Offers cultured butter flavors

Two new cultured butter flavors are subject of discussion in 3-page brochure. Only one ounce of either of the flavors will flavor 60 pounds of dough or 150 pounds of butter creams at a cost of less than 12 cents.

Brochure provides directions for use in various products for each flavor as well as including price lists. Ingredients used in each flavor are also given.

("An Introduction to Cultured Butter Flavors", may be obtained from Henry H. Ottens Mfg. Co., Inc., 129 S. Front St., Philadelphia 6, Pa.)

For more information circle 5119 on Reader Service Slip.

Cheese color stays same even with pH changes

Process cheese color, which is not subject to color variations due to changes in pH, has been developed. Color, made up of a blend of carotenoid pigments, can be shaded in variations from yellow to red yellow.

In addition to providing color, product also supplies nutrition in the form of vitamin A potency. It is packaged in 5 gallon pails (38 pounds net) or 55 gallon drums (400 pounds net).

(Process cheese color is made by Barnett Laboratories, Inc., 6256 Cherry Ave., Long Beach 5, Calif.)

For more information circle 5120 on Reader Service Slip.

Over 50 listings of flavor ingredients

Over 50 flavor ingredients are listed in a 36-page catalog.

Included are a wide variety of flavors, spices, certified colors, sauce bases, aromatic chemicals and cover odors for bakery foods, alcoholic and non-alcoholic beverages, desserts, dairy products, confections, canned foods and nu-

(*Continued on page 88*)

Plants, Companies, Personalities

Beatrice Foods Company

Chicago, announces appointment of Curtis M. Cavileer, Jr., as vice president and general manager of its divisional company, Lutz & Schramm, Inc., Pittsburgh, processor of pickles, jams and jellies.

Borden Foods Company

has added Dr. Samuel A. Matz to its research staff. Dr. Matz has been chief of the cereal products branch of the US Army Quartermaster's Food and Container Institute in Chicago. At Borden, he will be in charge of experimental work with refrigerated doughs.

Norda Essential Oil and Chemical Company, Inc.

New York City, announces election of R. William Bjork as a director, and his appointment as manager of the firm's Division of Customer Relations. Bjork recently retired as manager of the white oil division of L. Sonneborn Sons, Inc., refiners of petroleum chemicals. He is a partner of Kamen & Company, members of the New York Stock Exchange.

Sanders Company

Detroit, announces election as president of Charles H. Welch, Jr. Associated with the 84-year-old confectionery business for more than 45 years, Welch succeeds Fred W. Sanders, named board chairman.

Citrus Products Company

Chicago, has elected Henry S. Embree, president since 1951, to the newly created position of board chairman. Don E. Woode, executive vice president, succeeds Embree as president.

(*More on page* 111)

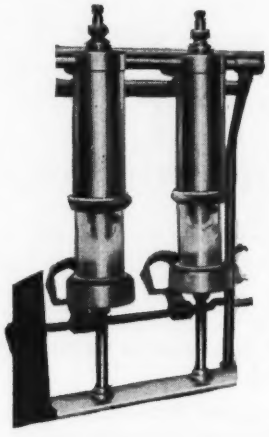
For more information on product at right, circle 5121 see information request blank opposite last page.

We Control Everything

(everything but nature)

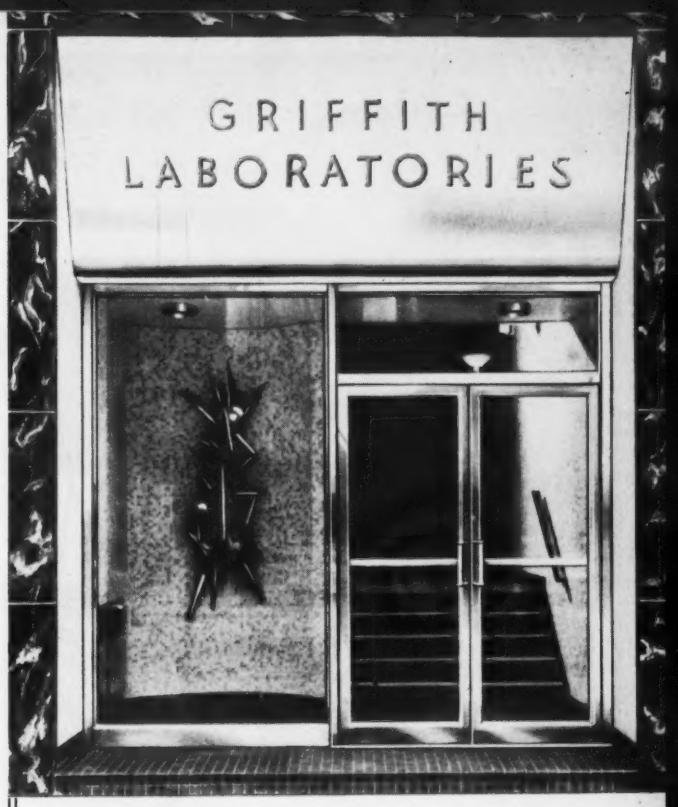
To Bring You

The Best in Spices



There's more to this story of quality control and how it gives you the best flavor in spices. The Griffith man will tell you about it next time he calls.

The Best in Cures to go with the Best in Spice



Our control starts with laboratory evaluation of a sample of the spice under consideration. It must *measure up* to Griffith's standard in both chemical and organoleptic evaluations.

When the shipment of spice arrives, we repeat the evaluation procedure to compare it with the sample.

In storage, the freshness and quality is protected by regulation of light, humidity and temperature.

And grinding is laboratory controlled. The meshes are checked. A "balance" is run—to be sure that spices are being ground to the desired meshes without loss of flavoring.

Last stage of control is packaging. According to the customer's wish: "Bulk," in fiber drums. Or, sealed in cellophane within a batch-size (unit) bag — packed in a fiber shipping drum.

THE GRIFFITH LABORATORIES, INC. •

CHICAGO 9, 1415 W. 37th St. • UNION, N. J., 855 Rahway Ave. • LOS ANGELES 58, 4900 Gifford Ave.

(*Continued from page 86*)

merous other products.

Various formulas for proper use of these aromas, flavorings and coloring agents are also included in catalog.

(Catalog of flavor listings is available from Florasynth Laboratories, Inc., 900 Van Nest Ave., New York 62, New York.)

For your copy simply circle 5123 on Reader Service Slip.

Provides benefits of milk solids, cheese and vitamins

Single ingredient, which can be incorporated into dry, wet or biscuit form dog food, provides benefits of milk solids, cheese and vitamins.

Adding to present formulas at 5 per cent levels, product eliminates purchase of separate ingredients to provide same value. It is available in 100 pound, multiwall, polyethylene lined bags.

(Peebles' D.D.F. dog food ingredient is available from Western Condensing Co., 340 W. College Ave., Appleton, Wisconsin.)

For more information circle 5124 on Reader Service Slip.

Enzyme supplement for animal feeds

An enzyme supplement for use in the manufacture of animal feeds consists of a combination of three enzymes designed specifically to release additional nutrients in feeds.

Free-flowing powder is packed in 50 and 100 pound fiber drums.

(Zymo-Pabst enzyme supplement for animal feeds is a product of Pabst Laboratories, 1037 W. McKinley Ave., Milwaukee 5, Wis.)

For more information circle 5125 on Reader Service Slip.

For more information on product at right, circle 5126 . . . see information request blank opposite last page.

Taste Appeal... Eye Appeal... Buy Appeal with...

OK BRAND

DRI-SWEET

CORN SYRUP SOLIDS

More successful processors are recognizing the advantage of a single conditioner-sweetener like OK BRAND DRI-SWEET Corn Syrup Solids.

DRI-SWEET fortifies *Taste Appeal* by keeping comminuted meats at the peak of their natural deliciousness. Retains flavor and juices without over sweetening.

DRI-SWEET puts more into *Eye Appeal* because this pure, transparent and nutritious carbohydrate from corn syrup preserves appetizing colors. Reduces watering-off and shrinkage. Binds meat particles for more appealing texture (easier processing, too!)

Proper taste and eye appeal add up to greater *Buy Appeal.* Only OK BRAND DRI-SWEET performs so well, yet is so economical and easy to use. Available in 2 popular forms: OK BRAND DRI-SWEET 42 D.E. Coarse and 42 D.E. Powdered. All available in convenient 100 lb. moisture-proof bags.

"The Man From Hubinger" is ready to offer detailed advice on how OK BRAND DRI-SWEET can improve your comminuted meats. If he hasn't called on you, write, wire or phone today for prompt attention to your needs.

THE HUBINGER COMPANY

Keokuk, Iowa

NEW YORK • CHICAGO • LOS ANGELES • BOSTON • CHARLOTTE • PHILADELPHIA

5122 on Reader Service Slip.

A wide variety of food products enjoy increased appetite appeal seasoned with Bakon Yeast.

Exciting New Smoked Flavor for foods

Food products, plain or seasoned, get a zestful flavor boost with hickory-smoked Bakon® Yeast. Tasty Bakon is a U.S.P. Dried Torula Yeast, salt free, and genuinely smoked for an authentic bacon-like flavor. It carries 50% protein and the entire vitamin B complex. Bakon is stable and uniform. It contains no starch, sugar or meat. Discover for yourself why many important food firms now incorporate hickory-smoked Bakon Yeast into their products.

Lake States

Manufacturer and distributor of Bakon Yeast

Lake States Yeast and Chemical Division
of St. Regis Paper Company • Rhinelander, Wisconsin

SALES OFFICE: 420 Lexington Ave., New York 17, N.Y.

Send for your complimentary test sample today.

HOW TO SOLVE YOUR CAN DRYING PROBLEMS

Although many plants have large investments in high speed automated lines for the canning and bottling of beverages and foods, lack of effective equipment to 'blow-off' water is frequently responsible for lowered production rates.

HERE'S WHAT HAPPENS

Inadequate 'blow-off' power causes:

(a) rusting of cans which can subsequently invite consumer rejection.

(b) dampening and weakening of cardboard cases and other shipping containers.

(c) failure of electronic inspection apparatus.

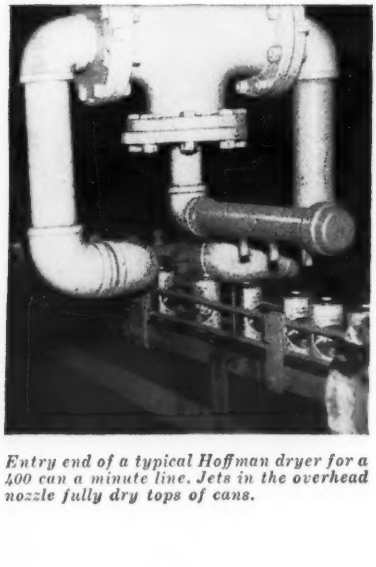
(d) improper marking and labeling.

COMPRESSED AIR OR EVAPORATION CAN'T HANDLE THE JOB

The use of compressed air for 'blow-off' is not only expensive but actually adds to the drying problem. Despite the presence of filters and traps in the piping, oil is blown out with the air stream. In addition, high pressure reciprocating compressors are costly and demand considerable maintenance. Drying by evaporation is not only ineffective, but time consuming as well.

AN EFFICIENT AS WELL AS INEXPENSIVE SYSTEM

Drawing on its long experience as a supplier of continuous strip and sheet drying equipment to the metal and rubber industries — over 90% of the tin plate produced in the Free World is dryed by its continuous strip dryers at line speeds as high as 3,000 FPM — the U. S. Hoffman Machinery Corp. has developed systems for drying containers by air squeegee which are not only efficient but possess the twin virtues of low cost and trouble free operation.



Entry end of a typical Hoffman dryer for a 400 can a minute line. Jets in the overhead nozzle fully dry tops of cans.

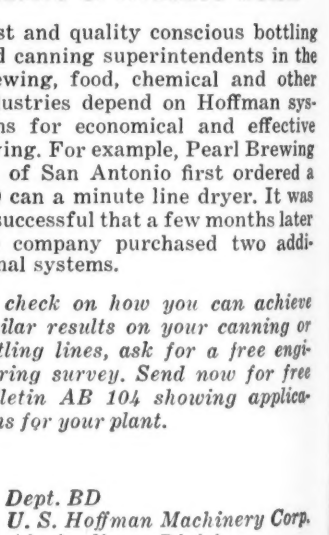
Exit end of a typical Hoffman dryer. Slotted side headers straddle conveyor line for complete drying of sides of containers.

JET PROPELLED 'BLOW-OFF'

Hoffman dryers remove moisture by air-squeegee, utilizing the energy of jets of high velocity air issuing from properly sized and shaped orifices. Air discharged from drying nozzles and headers is clean and dry — as free of contaminants as the air brought into the inlet of the blower itself.

TROUBLE-FREE OPERATION

Heart of a Hoffman can drying system is the rugged cast iron centrifugal blower built with bearings mounted in outboard housings. Dynamically balanced shaft and impeller assemblies insure quiet operation and smooth performance. Hoffman Blowers produce pressures up to 10 psig or vacuums up to 12" Hg with air volumes to 20,000 cfm.



Cutaway view of Hoffman blower

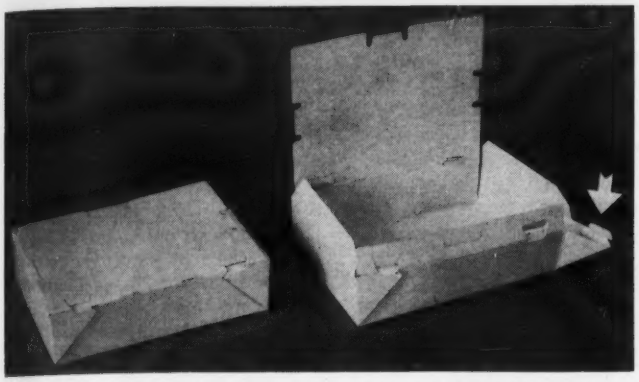
YOUR PLANT CAN BENEFIT PROFITS UP... COSTS DOWN

Cost and quality conscious bottling and canning superintendents in the brewing, food, chemical and other industries depend on Hoffman systems for economical and effective drying. For example, Pearl Brewing Co. of San Antonio first ordered a 400 can a minute line dryer. It was so successful that a few months later the company purchased two additional systems.

To check on how you can achieve similar results on your canning or bottling lines, ask for a free engineering survey. Send now for free Bulletin AB 104 showing applications for your plant.

Dept. BD
U. S. Hoffman Machinery Corp.
Air Appliance Division
103 Fourth Avenue
New York 3, New York

5127 on Reader Service Slip.



Liquid retention without liner is achieved through full-height corner folds with notched tabs (arrow) which lock into slots in cover and into one-half-in. side extension flaps

Liquid-tight without liner for moist-pack frozen foods

New carton is faster freezing, stronger than cello-lined and glued cartons of same basis-weight foodboard

J. G. REH, plant manager
JOHN HENDRICKS, quality control manager
Birds Eye Division, General Foods
as reported by KARL ROBE

Problem: Products that go into cartons moist—such as spinach, southern greens, cream style corn and cooked squash—must be filled into leak-proof cartons which retain drippage until frozen.

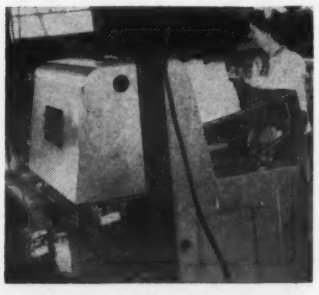
Until recently such products were packaged in foodboard cartons lined with cellophane, although this cello insert added expense to the carton.

The cello-lined carton was generally satisfactory. However, moisture or product occasionally would be trapped between the loose corner folds of the lining and carton.

Solution: Birds Eye Frosted Foods Division of General Foods, Walla Walla, Wash., was first plant to convert to a linerless liquid-tight carton. The Santa Cruz, Calif., and other Birds Eye plants are now using this carton also.

The flat blank is scored so that the excess corner material folds outward, then locks flat against outside of carton (top photo). A notched tab on each corner fold (arrow) locks into slots in cover and in newly incorporated side extensions (which fold inward when closure is completed).

An added advantage is increased strength, gained by (*Continued on page 96*)



Special machine forms precut, scored blanks into cartons ready for filling, at up to 200 per/min

FLUIDICS* AT WORK

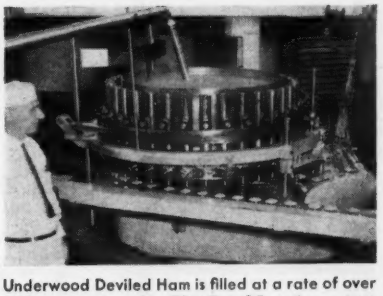
From mite to mighty . . . fill them all with Pfaudler fillers

Whatever size your container . . . #211 x 101.5 can or gallon; whatever your product . . . a spread like deviled ham or lightly fluid antifreeze, a Pfaudler rotary piston filler will handle it for you fast, at low cost and without spill.

The Wm. Underwood Co. at Watertown, Massachusetts, uses a Pfaudler RP-35 filler to package over 500 cans of viscous deviled ham a minute. Accuracy is held to ±1/10 fluid ounce—thus cans come off the filler clean.

A Southwestern petroleum manufacturer fills antifreeze at 60 to 80 *gallon* cans a minute using a seven-station Pfaudler machine. Similar results are common in citrus, soup, syrup and evaporated milk plants.

Simplicity of design is the all-important characteristic of Pfaudler fillers. Low maintenance—only four primary wearing parts. Fast cleaning—one man does a thorough job in just 30 minutes. High accuracy—precision adjustment even at full operating speeds. No product loss . . . positive acting no can-no fill mechanism.



Underwood Deviled Ham is filled at a rate of over 500 cpm, using this Pfaudler 35-station rotary piston filler.

For more information, write to our Pfaudler Division, Dept. FP-109, Rochester 3, New York. Or contact your Pfaudler representative.

*FLUIDICS is a new Pfaudler Permutit program that provides a modern, imaginative approach for handling and processing liquids and gases more profitably.

PFAUDLER PERMUTIT INC.
Specialists in FLUIDICS . . . the science of fluid processes

5128 on Reader Service Slip.

CCA

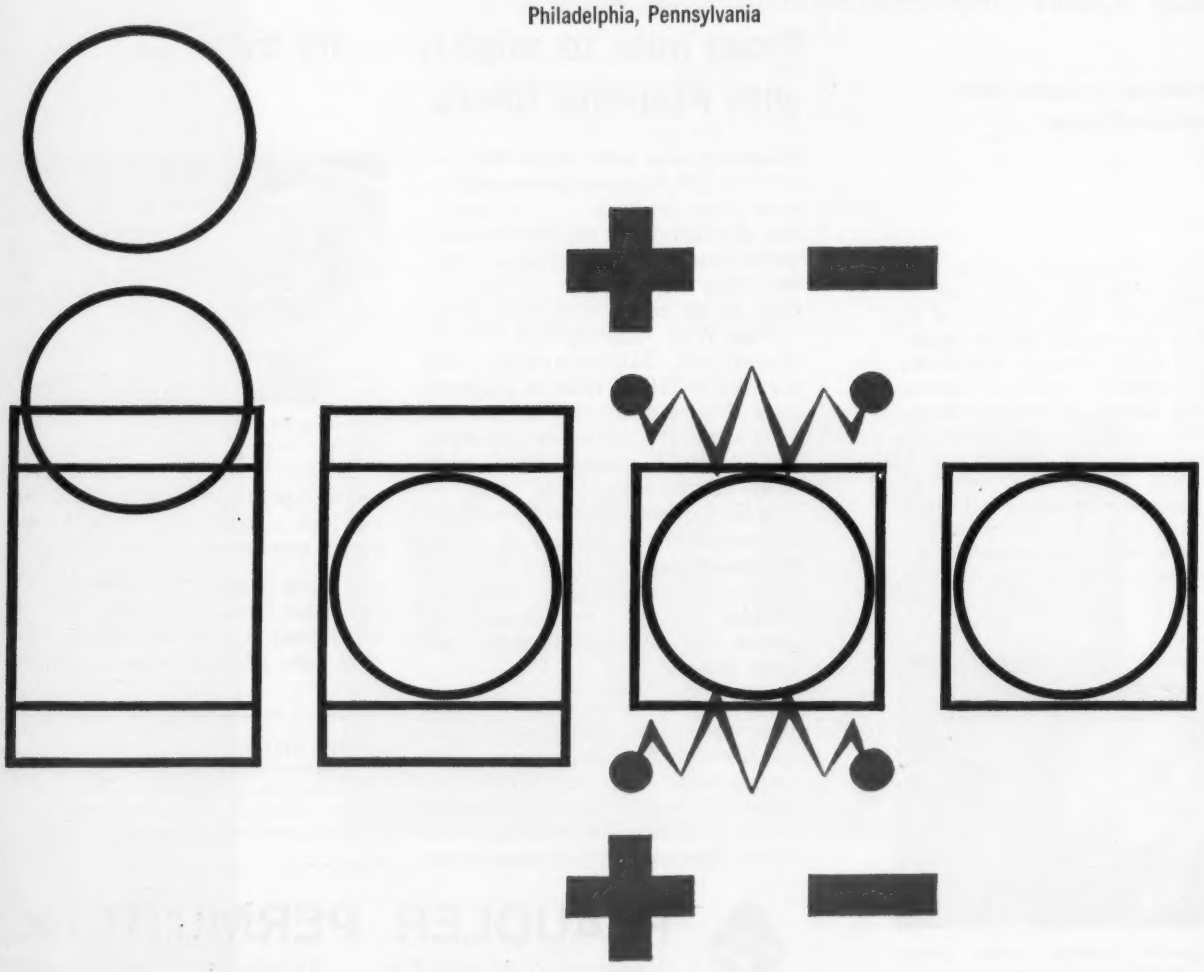
FOLDING CARTONS
SHIPPING CONTAINERS
SEFTON FIBRE CANS
PLASTIC PACKAGING

new **di-electric sealer**

puts profits in your package

A new advance in automatic packaging, CCA's Concora Di-Electric Sealer, now offers profit opportunities for **unwaxed** as well as wrapperless waxed cartons. Successfully proven in the frozen food field, this high-speed machine positively seals carton flaps by the heating action of radio waves on cold glue and provides a **better bond.** The high-frequency waves have no effect on carton contents. Di-Electric Sealing provides not only the cost savings of foolproof, high-speed production, but increased profits resulting from superior product protection and merchandising advantages. This innovation is typical of CCA's total packaging service. **Fully available to you,** it is a service based on a knowledge of all phases of production, distribution and handling. Write or call for details on the Concora Di-Electric Sealer and its wide range of application.

CONTAINER CORPORATION OF AMERICA
Valley Forge Marketing Center, 5000 Flat Rock Road
Philadelphia, Pennsylvania



5129 on Reader Service Slip.

Sift-proof, automatic bags in intermediate sizes

Automatic style, sift-proof bags, with heat-sealed construction and a flat block bottom, are now available in capacities ranging up to 25 pounds.

Originally developed and successfully employed as a coffee package, bags have expanded into other end uses where sift-proofness, moisture retention or prevention of moisture pick up is essential.

Automatic style, sift-proof bags are available in sizes from one-quarter pound up to 25-pounds. Two-pound size is shown on left, with 5-pound size on right

Bags offer protective packing and shipping of hygroscopic products such as dried milk, dehydrated potato flakes and finely powdered materials.

(Flav-O-Tainer bags are a development of Continental Can Company, Flexible Packaging Div., Devon, Pa.)

For more information circle 5130 on Reader Service Slip.

Sums up current trends in polyethylene packaging

Over 300 consumer items currently being packaged in polyethylene film are listed in revised survey. Study also presents summary observations on outstanding trends in use of polyethylene for packaging since publication of previous survey in 1957.

Information was gathered by checking supermarkets, variety, drug, department and specialty stores — all of a national chain type.

Thus, although done locally,

the study may be considered fairly representative of national trends.

("A Summary of Current Trends in Polyethylene Packaging," Study No. 283-2, 10 pp, is offered by Monsanto Chemical Company, Plastics Division, Springfield, Mass.)

For more information circle 5131 on Reader Service Slip.

Rectangular cans at four per second

Line of machines produces standard and tapered rectangular cans. New multiple-head flanger in line permits production speeds to 250 cans per min.

Machine combines principle of die and roll flanging. Its range is one in. by 2¼ in. chuck size by 1¾ in. high minimum; maximum is 3 in. by 4½ in. chuck size by 9 in. high.

(AMS No. 561 Automatic Rotary Flanger is a product of The Max Ams Machine Co., Scofield Ave., Bridgeport 5, Connecticut.)

For more information circle 5132 on Reader Service Slip.

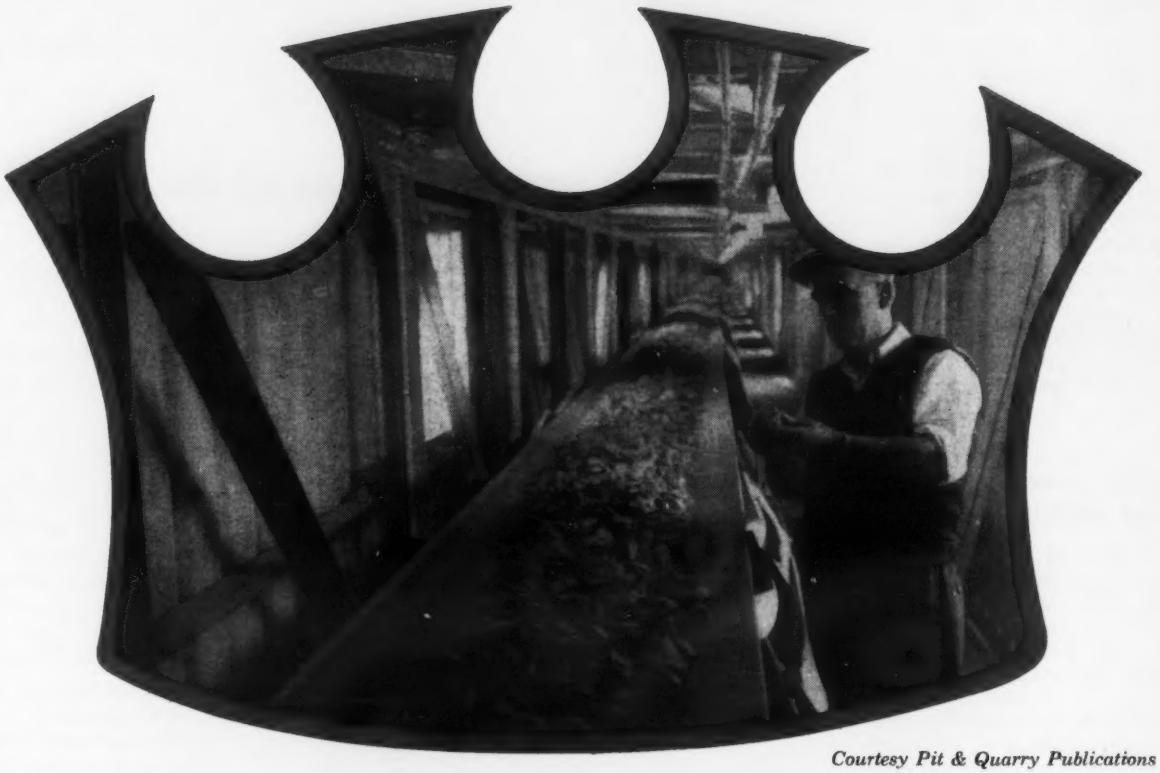
Imprints invisible code on candy box covers

Imprinting a code in invisible ink on the cover of its candy boxes provides a foolproof quality control guide for Stephen F. Whitman and Son, Inc., Philadelphia. Attractive design of package is unmarred.

Code is applied automatical-

(*Continued on next page*)

Code-mark may be read only by exposing to ultraviolet lamp

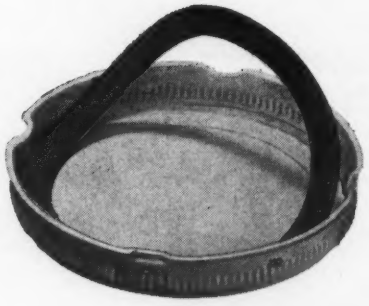


Courtesy Pit & Quarry Publications

On ore conveyor belts . . . and in lug caps—

Live rubber can take it

Sharp-edged boulders crash onto a conveyor belt month after month, but resilient live rubber protects the fabric core from cuts and slashes. The resilience of live rubber in Crown lug caps protects your product in the same dependable way. Only Crown lug caps give you this protection. May we have the opportunity to discuss or provide you with more details?



CROWN

for cans · crowns · closures · machinery

CROWN CORK & SEAL COMPANY, INC., 9300 Ashton Road, Philadelphia 36, Pa.

5133 on Reader Service Slip.

(*Continued from preceding page*)
ly with an imprinter attached to infeed of wrapping machine. Imprinter fits in idle space on wrapping unit, and accurately locates its invisible imprint in the same spot on each successive package.

(Model 700 Rolaprinter, as used at Stephen F. Whitman and Son, Inc., is manufactured by Adolph Gottscho, Inc., Hillside 5, N.J.)

For more information circle 5134 on Reader Service Slip.

Guide to better meat wrapping

Handy 38-page handbook gives information on types of cellophane used, contains answers to questions that arise on meat wrapping and provides cost and source data on materials.

Methods for preparing meat for wrapping are described and illustrated. There also are suggestions for application of thermoplastic labels.

("Meat Wrapping Handbook" may be obtained from Market Development Department, American Viscose Corporation, 1617 Pennsylvania Blvd., Philadelphia 3, Pa.)

For your copy simply circle 5135 on Reader Service Slip.

'World's most versatile' can bodymaker

For packers planning to make their own cans

Features: Unit manufactures cans up to 6 3/16 in. in diam, and, with modification in feed bar stroke and work station housing (involving standard change parts) will produce cans up to 7 13/16 in. in height.

Description: A single, centrally located crankshaft insures precise synchronization of all motions as well as the extreme accuracy needed for high-speed operation.

Body feed is of conventional bottom feeding type, and has a simplified blank hopper and

What you should know about

Is your box a delivery boy

There's a whale of a difference. It usually shows up on the sales charts.

Did you know, for example, that some products' sales have increased substantially *after* their containers were redesigned *visually?* And consider this: A single corrugated box, in an average service lifetime, can meet and influence hundreds of people. Since you've paid for this valuable display space, why not make the most of it?

Plant . . . to point-of-purchase

Colorfully printed corrugated boxes work hard for you in dozens of ways. You can use them to promote your brand name—create a "personality" for your product—add point-of-sale impact. Your designs can tie in with special and seasonal promotions and events —or your advertising. They can help develop dealer preference by speeding identification, simplifying inventory control. Even on factory warehouse shelves good-looking boxes do an important in-plant merchandising job.

Choosing the design

The type of design and color to use will be governed by the specific marketing needs and the product itself. Is it an industrial . . . a staple . . . a luxury? Should the mood be

design and printing of Union boxes

...or a traveling salesman?

gay . . . warm . . . dignified? Is it desirable that the design be adaptable to family packaging?

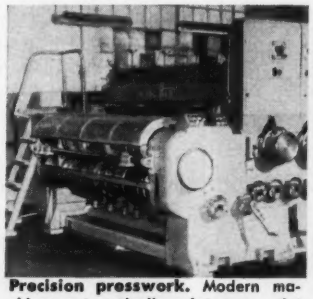
Union's Package Design Department will be glad to analyze each of these factors for you, help you take maximum advantage of the many merchandising opportunities your container offers.

Making the right impression

How well your box design succeeds as a salesman depends largely on how it is reproduced. And printing on corrugated is an exacting science. Roll pressures, for example, must be light enough not to damage or weaken corrugations...yet heavy enough to insure clear, crisp impressions that will stand up (and stand out) even under the severest handling and shipping hazards.

The tools for the job are critical too. Today, flexible printing plates have been perfected so that they can be tailored to the specific job to be done. There are new moisture-set and oil-base inks to choose from as well as new precision machines for the actual printing. When these developments are teamed with the bright, smooth surface of Union containerboard the result is a corrugated box that gives you the best in protection for your products and merchandising for your brand.

Ask to see samples of what has and what can be done. Union's artists and pressmen have produced outstanding designs for some of the country's largest and most discriminating box users. Their services and talents are at your disposal.



Precision presswork. Modern machines automatically print, score, slot and stack box blanks — in one fast operation.

Hardworking designs quickly identify contents including brand, size, count, code number.

An experienced art staff is at your service. Specially trained to get the most out of corrugated printing, they can help you achieve maximum merchandising impact with your box.

Write for new informative booklet, "Printing of Corrugated Boxes."

union camp

UNION BOXES

UNION BAG-CAMP PAPER Corporation
233 BROADWAY, NEW YORK 7, N. Y.

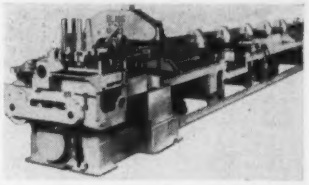
Factories: *Savannah, Ga.; Trenton, N.J.; Chicago, Ill.; Lakeland, Fla.*

Sales Offices: *Eastern Division — 1400 E. State Street, Trenton, N.J.*
Southern Division — P.O. Box 570, Savannah, Ga.; P.O. Box 454, Lakeland, Fla.
Western Division — 4545 W. Palmer, Chicago, Ill.

5136 on Reader Service Slip.

sucker cup assembly. An independently driven two-roll flexer is standard equipment.

Other features include mechanical and electrical protective devices to prevent jamming damage, and a water-cooled soldering attachment with a side carrier chain.



Versatile machine produces range of can sizes that would require several sizes of standard bodymakers

Open arch construction with one side open provides access to the forming parts.

(Model 603 "Universal" can bodymaker is manufactured by E. W. Bliss Company, Container Division, 1382 Raff Rd., S.W., Canton, Ohio.)

For more information circle 5137 on Reader Service Slip.

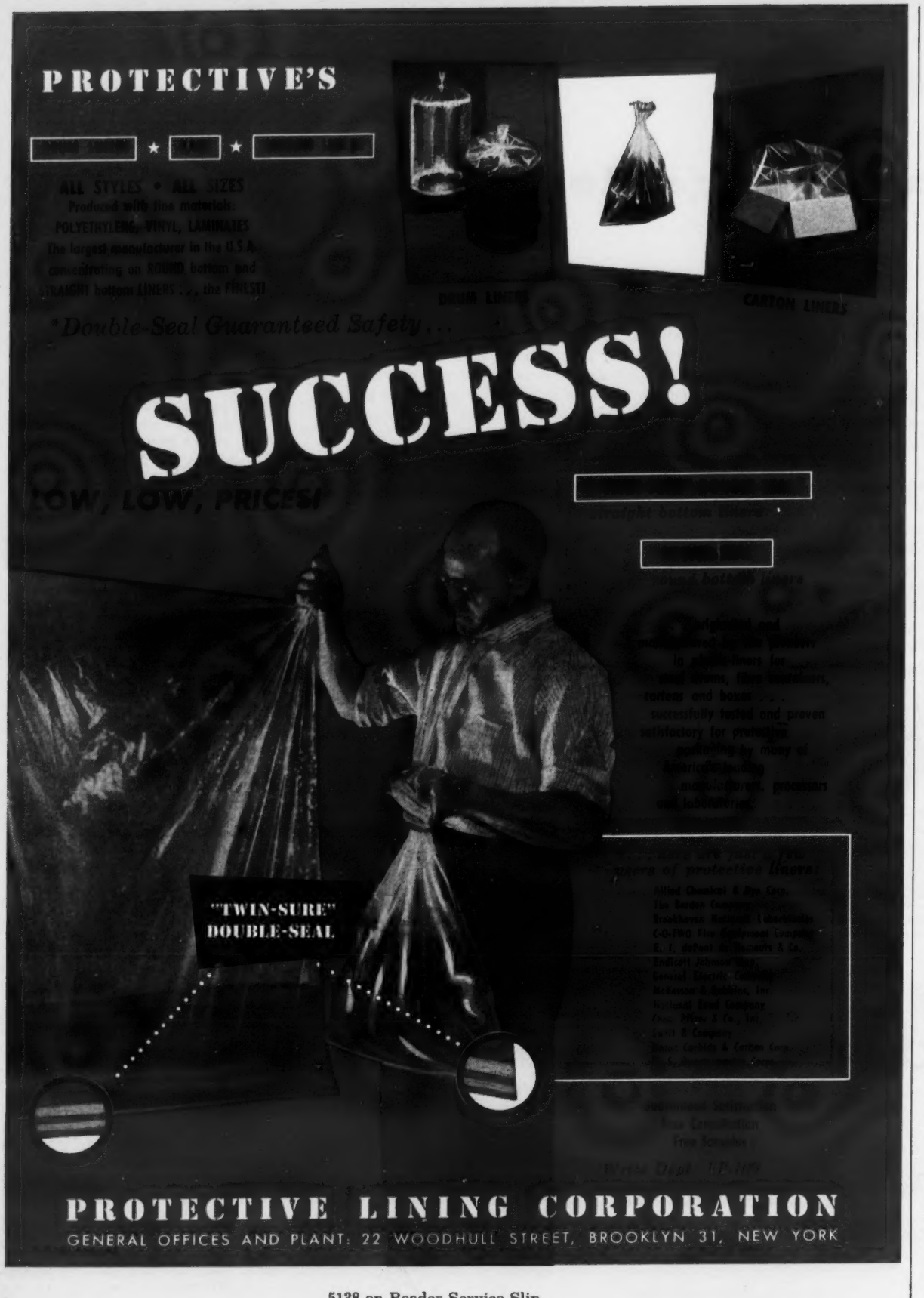
Gives wealth of sources on containers, packaging

Government bulletin is a useful bibliography of information on packaging and containers for all types of products, as well as on the various materials used for packaging.

Sections include a listing of publications published by various Government departments; publications made available by associations, societies and companies; directories; periodicals and names and addresses of the packaging and allied trade associations.

Price is noted for each publication, where pertinent.

("Containers and Packaging," 24-pp bibliography, is available without charge in single-copy quantity by writing Small Business Administration, Washington 25, D.C., or by contacting any of the SBA field offices or those of the US Department of Commerce.)



5138 on Reader Service Slip.

packaging

(*Continued from page* 91)

the one-half-in. side-extension flaps. Flaps in effect form "side-rails" around three sides of the opened carton, with the opened cover forming a backstop (photo p. 91). This minimizes spillage or spattering of produce during high-speed filling.

During closing, tabs in the cover lock into slots in the folded-down side rails. Result of this no-glue construction is a higher strength carton with same basis weight foodboard.

Results: Not only do the new cartons cost less (savings are $4 per 1000 over lined styles), but freezing time of products has been unexpectedly shortened.

This shorter freezing time is an observed phenomenon and shows up at the plate freezing operation as an actual increase in freezing rate, amounting to over 10 per cent.

It is thought that the reduced freezing time is obtained through absence of the cello lining, which probably acted as a heat barrier.

Because the cartons are stronger, they resist distortion in the plate freezers. Wastage has been reduced, since excess bowing of cartons formerly slowed casing operation and resulted in damaged cartons.

(Klikweb carton forming and closing equipment is product of Kliklok Corporation, 730 Broadway, Redwood City, California.)

For more information circle 5139 on Reader Service Slip.

(Klikweb cartons at above installation are supplied by the following:)

Marathon, A Division of American Can Company, Menasha, Wis.

For more information circle 5140 on Reader Service Slip.

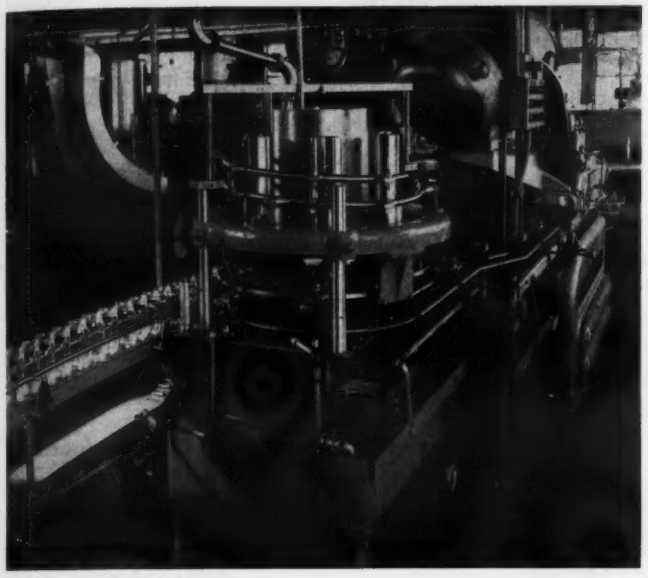
Container Corporation of America, 38 S. Dearborn St., Chicago 3, Ill.

For more information circle 5141 on Reader Service Slip.

Fibreboard Paper Products Corporation, 1789 Montgomery Street, San Francisco 11, California.

For more information circle 5142 on Reader Service Slip.

Heavy sirups filled without spill at jar-per-second rate



AT Robert A. Johnson Company, Milwaukee, Wisconsin, a major supplier of fountain toppings, a six-station rotary piston filler, installed in 1958 in conjunction with a company-wide planned improvement program, fills caramel, butterscotch, fudge and chocolate sirups in separate production runs.

In operation five days each week for the past year, filler has been cycling at 55 jars per min on a regular production basis, without spill.

Nature of the product and need for rapid changeover from one sirup to another make clean, accurate fill and ease of cleaning mandatory. Unit can easily be cleaned in 30 min, needs only routine maintenance and inspection.

In addition to rapid product changeover, the filler eases the problem of changing container sizes. Height change can be accomplished by one man in 12 min or less, and containers two in. to seven in. in height can be accommodated. Four cylinder sizes handle a filling range from one to 51 oz.

Of special significance in heavy, viscous applications such as at the Johnston Company, the filler allows minimum product cushion between end of piston and container. A "no-can no-fill" device also is included.

(The "RP-6" rotary piston filler, as in operation at Robert A. Johnston Company, is manufactured by The Pfaudler Company, a Division of Pfaudler Permutit Inc., 1058 West Ave., Rochester 3, N.Y.)

For more information circle 5143 on Reader Service Slip.

Checklist for flexible package materials

Four-pg brochure serves as guide in systematic selection of flexible package materials.

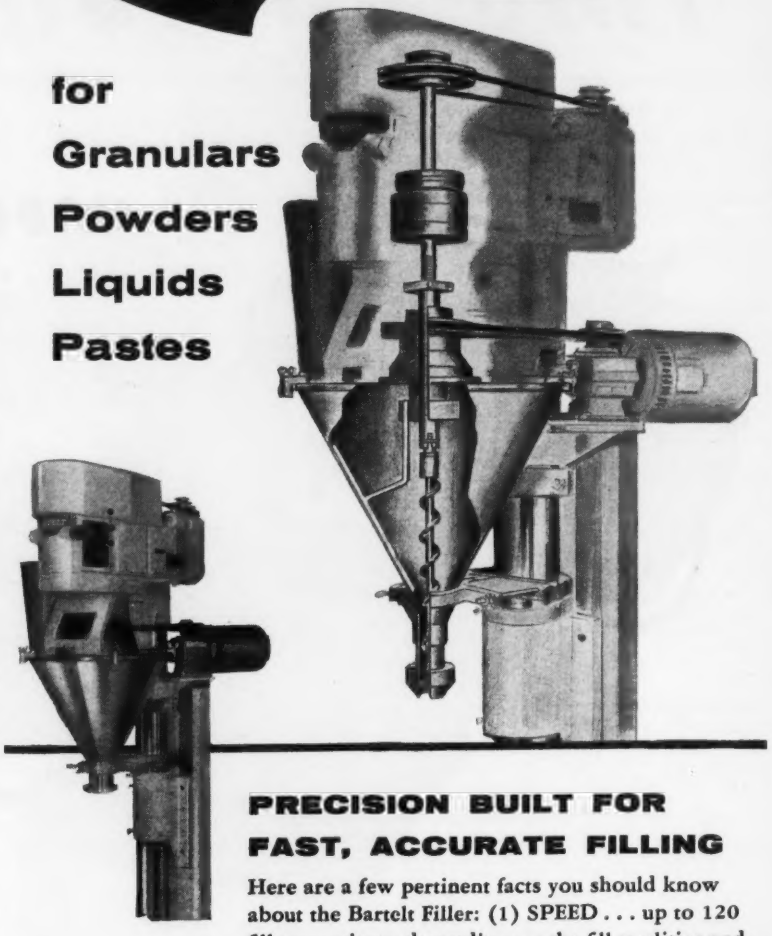
Literature lists 21 questions which cover the various requirements packaging materials must meet.

(Bul—"21 questions," is available from Riegel Paper Corporation, 260 Madison Ave., New York 16, N.Y.)

For your copy simply circle 5144 on Reader Service Slip.

High speed, automatic BARTELT filler

for
Granulars
Powders
Liquids
Pastes



PRECISION BUILT FOR FAST, ACCURATE FILLING

Here are a few pertinent facts you should know about the Bartelt Filler: (1) SPEED . . . up to 120 fills per minute depending on the fill qualities and characteristics. Split fills can more than double this speed. (2) ACCURACY . . . variation no more than 3% (plus or minus 1½%) on most products. (3) VERSATILITY . . . *One* Bartelt Filler will handle granulars, powders, liquids, and pastes by means of interchangeable tooling. It can be applied to all types of operation . . . from hand lines to automatic packaging machinery. Fill quantities can be varied from one gram to five pounds.

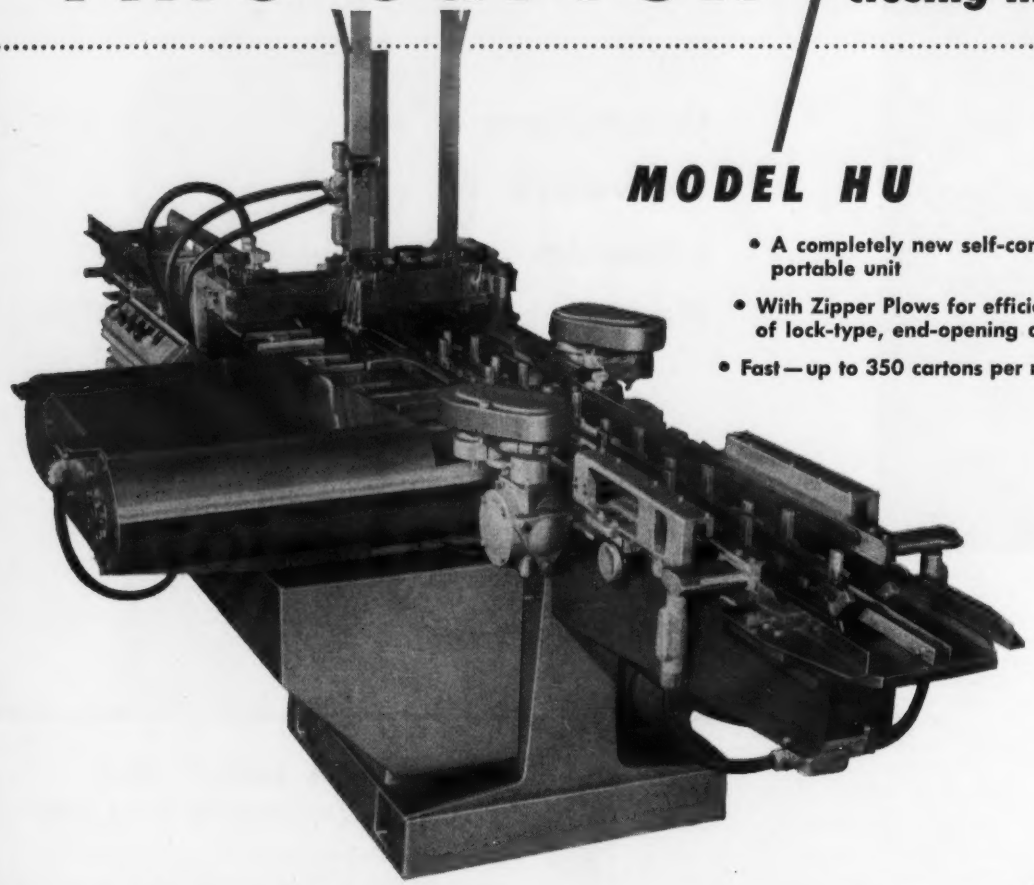
Write Today for NEW Filler Catalog

BARTELT ENGINEERING COMPANY
1900 Harrison Ave., Rockford, Ill. • New York Office: 370 Lexington Ave. NYC

5145 on Reader Service Slip.

NEW fmc carton set up filling & closing machine

MODEL HU



- A completely new self-contained portable unit
- With Zipper Plows for efficient closing of lock-type, end-opening cartons
- Fast—up to 350 cartons per minute

Simply plug it in, fill the carton feed magazine with flat cartons, flip the "start" switches, and your FMC Model HU Carton Handling Machine takes over—giving you one of the smoothest high speed automatic machine operations in your entire plant.

No other carton handler – packaging such products as pies, TV dinners, ice cream cakes and pizza pies – gives you all these advantages:

1. **High speed** in continuous, automatic operation – up to 350 cpm, depending on product.
2. **Panel-board controlled** for low cost, one man operation.
3. **Trouble-free operation** and long machine life – this is ruggedly designed and precision constructed equipment.
4. **Portable** for roll-around positioning in various working areas.
5. **Versatile**—engineered for quick and easy adjustment to handle a variety of products requiring carton dimensions ranging from 6⅜" to 14" long by 3" to 10½" wide, flaps open.
6. **Sanitary, easy to clean**—constructed of stainless steel and aluminum, and to NEMA 4 Electrical Code.

You're sure to want complete information on this outstanding FMC unit. Write today, or ask your FMC representative to call.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
Canning Machinery Division
General Sales Offices:
WESTERN: SAN JOSE, CALIF. • EASTERN: HOOPESTON, ILL.

5146 on Reader Service Slip.

Plastic milk case keeps shape under extremes of heat or cold

Uses-Features: For handling paper or glass milk containers, plastic cases will inter-stack with present wooden cases.

Cases have great dimensional stability. They will retain their shape from minus 180 to plus 260 F.

Description: Molded cases are available in various colors. Their light weight facilitates easy handling.

(Plastic milk cases are produced by the Baker Box Company, 161 Union St., Worcester, Mass.)

For more information circle 5147 on Reader Service Slip.

Ship and store pasteurized liquid tenderizer in

Lightweight, unbreakable, germ-free pack

Continental Food Laboratories' new Controlled Meat Tenderizer (FP, Sept. 1959) – a triple-action blend of enzymes — requires complete sanitation and bacteria control.

Added to substantial savings in freight is fact that attractively printed "Cubitainer" is continuing advertisement for product

Pasteurization assures bacteria control, and for the highest degree of sanitation Continental ships its liquid product in single-trip "Cubitain-

ers" (FP, June 1956 and May 1959) — semi-rigid, heavy-weight polyethylene cubes completely enclosed within a corrugated box.

The cube is never removed from the box, the tenderizer being dispensed through a germ-free spout (see photo) that is safely resealed with a clip.

A hand-hold in the box makes it easy to pick up and pour from, and its light weight makes it easy to handle. The sanitary dispensing method avoids spills and drips, thus doesn't make the package sticky and messy in use or in storage.

There is no glass to break or metal to rust. Since the tenderizer must be kept under refrigeration, the neat, square "Cubitainer" package saves space in refrigeration units.

("Cubitainer" single-trip containers, in one-, five- and fifteen-gal sizes, are products of Hedwin Corporation, 1600 Roland Heights Ave., Baltimore 11, Maryland.)

For more information circle 5148 on Reader Service Slip.

(Corrugated outer cartons of "Cubitainers" are specially manufactured for Hedwin Corporation by Hinde & Dauch, Division of West Virginia Pulp & Paper Company, Sandusky, Ohio.)

For more information circle 5149 on Reader Service Slip.

"... and that's the way I want you to seal these cartons Miss Blake ... MISS BLAKE?"

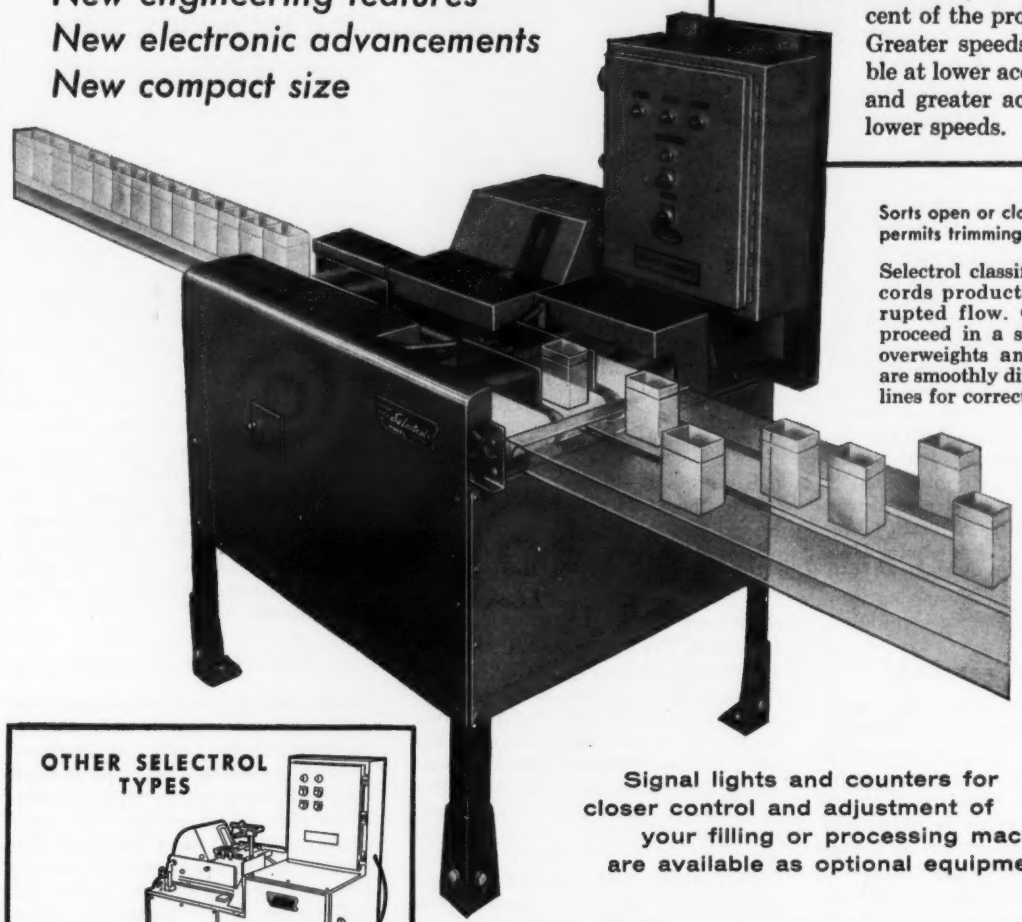
Exact Weight's New Automatic Checkweigher

New engineering features
New electronic advancements
New compact size

SELECTROL®
TYPE 1206

SPEEDS up to 120 weighings per minute.

ACCURACIES of 2/10 of one percent of the product. Greater speeds are possible at lower accuracies ... and greater accuracies at lower speeds.

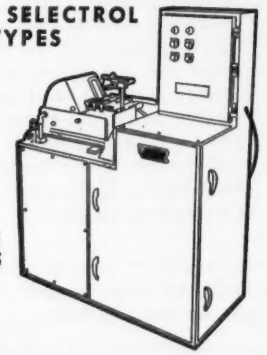


Sorts open or closed packages ... permits trimming of rejects

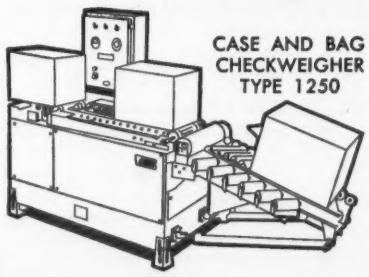
Selectrol classifies, sorts and records products in an uninterrupted flow. Correct weights proceed in a straight line flow, overweights and underweights are smoothly diverted to separate lines for correction or trimming.

Signal lights and counters for closer control and adjustment of your filling or processing machines are available as optional equipment.

OTHER SELECTROL TYPES



TYPE 1245



CASE AND BAG CHECKWEIGHER TYPE 1250

This new Selectrol Checkweigher, field tested and proven, is engineered to maintain the highest degrees of accuracies with relation to realistic speed requirements of most production lines. Operation is completely automatic. Tolerances are adjustable.

Selectrols are made by Exact Weight, a manufacturer of scales for 45 years, with experience gained through hundreds of checkweighing installations during the past 18 years in 28 states and in foreign countries. Write today for complete information on Selectrol and the advantages it can offer you.

THE EXACT WEIGHT SCALE CO.
909 W. FIFTH AVE., COLUMBUS 8, OHIO
In Canada: 5 Six Points Road, Toronto 18, Ont.

Exact Weight SCALES

Sales and Service Coast to Coast

Find us in your local "Yellow Pages"

5150 on Reader Service Slip.

Aluminum Foil Packaging Plastic Film Laminations

Report No. 23 of a Series by Reynolds Metals Co.

The important functional properties of aluminum foil for packaging can obviously be supplemented by combining aluminum foil with other materials. Previous reports in this series have discussed many combinations.

The Broadest Field

The broadest field for such expansion of packaging properties is the combination of plastic films and coatings with aluminum foil. Various plastics can add heat sealability, improved flexibility, scuff resistance and greater overall durability to the protective qualities inherent in the foil alone. In fact, combinations of foil with plastic films have produced a whole new family of materials—making possible flexible packages, and also unit packages, for products which formerly could use nothing except conventional rigid containers.

Adhesive Laminating

In early developments, these combinations were achieved by adhesive laminating. This type of process is too expensive for many packaging applications even when the laminate is a simple two-layer combination. As laboratory exploration advanced into more complex structures, the cost increased—limiting the application of some materials to products requiring very special protection. During this time, and pending a solution to the economics of the problem, valuable research data was accumulated in complex laminates having many properties. These were sometimes difficult to trace to particular components, where several contributed in varying degree. But basic categories were established.

For example, combinations of polyester films with aluminum foil provide materials with exceptional strength. Reverse-printed cellulose acetate or cellophane films laminated to foil provides materials with high gloss and aesthetic properties. Saran and pliofilm in combinations with aluminum foil contribute properties of gas impermeability.

The economics of combination plastic-foil packaging was revolutionized by the development of extrusion coating. This high speed process extrudes suitable resins and polyolefins under pressure and heat directly upon the aluminum foil — to serve either as a final coating or layer of the structure, or to act as an adhesive for a further layer. Cost is much reduced, as compared to regular laminating. Therefore, this type of protection becomes available to a wide and steadily increasing variety of products.

Pilot Plant Operation

Recognizing the vast possibilities, the Reynolds Metals Company pioneered in this field. The Pilot Plant of Reynolds Research and Development Laboratory is equipped with the most modern plastic extrusion machinery — including a web carrying unit having turret unwinds, turret rewinds, an extra large cooling drum, slitting knives, and a secondary unwind to permit laminating two webs with the extruded plastic. This plant manufactures samples and evaluates all materials under carefully controlled laboratory conditions, maintaining careful records. Only by such control can the right selection for a packaging application be made and duplication of the material on the production line be assured.

Besides its Pilot Plant operation, the Reynolds Metals Company also has production extruders strategically located across the country, to supply packaging material needs after evaluation and selection.

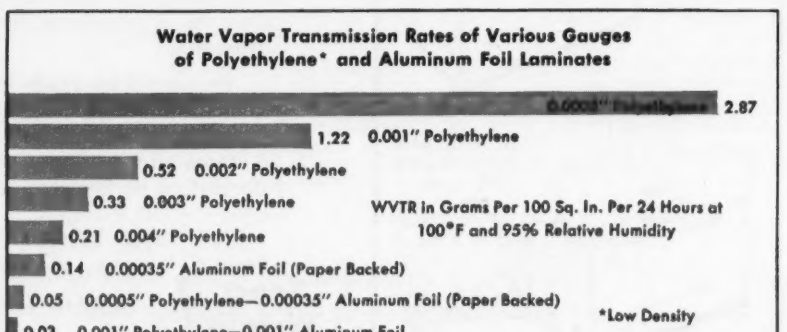
Thorough Materials Evaluation

The Pilot Plant, with its complete equipment, makes possible the thorough evaluation of all materials, including the variations in performance characteristics achieved by variations in the components. For instance, the plastic resin most frequently utilized for extrusion coating to date is polyethylene. It has the unusual properties of heat sealability at relatively low temperature, low Water Vapor Transmission Rate and chemical resistance, coupled with ease of processing. But variations in the polyethylene specification can produce a wide variety of characteristics, which must be thoroughly evaluated so that choices for particular end uses can be based on actual test data.

The accompanying chart shows how effectively even the lightest gauges of aluminum foil together with an extremely light coating of polyethylene will achieve Water Vapor Transmission Rates greatly superior to much heavier gauges of polyethylene film by itself. In addition, economies can be effected by the combination.

For Further Information

Many plastic and aluminum foil combinations originally custom made by Reynolds for particular products are now on the market. One of them may well suit your needs. Or adaptations can be developed and thoroughly tested in the Pilot Plant. For further information on this or any phase of aluminum foil packaging, call the nearest Reynolds sales office. Or write to **Reynolds Metals Company,** Richmond 18, Virginia.


Water Vapor Transmission Rates of Various Gauges of Polyethylene* and Aluminum Foil Laminates
2.87
1.22 0.001" Polyethylene
0.52 0.002" Polyethylene
0.33 0.003" Polyethylene
0.21 0.004" Polyethylene
0.14 0.00035" Aluminum Foil (Paper Backed)
0.05 0.0005" Polyethylene—0.00035" Aluminum Foil (Paper Backed)
0.03 0.001" Polyethylene—0.001" Aluminum Foil
WVTR in Grams Per 100 Sq. In. Per 24 Hours at 100°F and 95% Relative Humidity
*Low Density

© 1959 by Reynolds Metals Company

See Reynolds shows—James Michener's "ADVENTURES IN PARADISE" Monday nights and "ALL STAR GOLF" every Saturday ABC-TV Network.

5151 on Reader Service Slip.

packaging

Automatically wrap many package shapes, sizes at high speeds

Versatile, high-speed packaging machinery, which automatically wraps products of regular or irregular shapes and sizes, is described and illustrated in 12-page brochure.

Brochure lists and illustrates numerous products which may be wrapped on equipment as well as the names of over 50 firms now using the machinery.

Detailed operation of packaging unit is provided along with special feeders and accessories to meet various production needs. Different kinds of seals are also discussed.

("Campbell Wrapper" brochure is available from Food Machinery and Chemical Corporation, FMC Packaging Machinery Division, Hudson-Sharp Machine Company, 1201 Main St., Green Bay, Wis.)

For your copy simply circle 5152 on Reader Service Slip.

Featherweight corrugated resists humidity, is 33% stronger than regular

How shipping containers made with new heavy-duty, humidity-resistant corrugating medium give greater stacking strength at less cost is detailed in 4-page, illustrated folder.

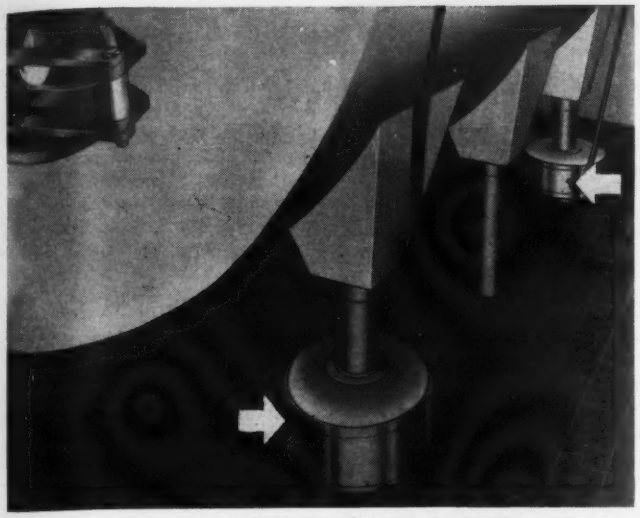
Laboratory tests are reported and packages for various products are illustrated.

("Stone-Cor" folder and sample are available from Stone Container Corp., 4200 W. 42nd Pl., Chicago 32, Ill.)

For your copy simply circle 5153 on Reader Service Slip.

READER SERVICE

For more information on new packaging developments described in these articles . . . use the convenient self-mailing Reader Service Slip opposite the inside back cover.



Arrows in above view indicate two electronic load cells attached to storage tank leg sockets to provide automatic weight control. Overall leg cell height is 12" from floor to tank socket

Convert any storage tank to automatic weight control system

Electronic load cells, attached to two or more legs, support weight of tank

Any storage tank may now be converted to an automatic weight control system by means of electronic load cells.

Load cells automatically weigh product in storage tanks to provide accurate inventory control. They may also be used to load and unload storage tanks and to start or stop pumps which carry product from tanks through lines to other processing equipment.

Two or more load cells per tank are attached to conventional storage tank leg sockets. Load cells support weight of tank. As product enters or leaves the tank, the weight difference is sensed by a steel deflector.

While deflection is small, less than 1/64", it is measured electrically by a differential transformer. Transformer sends impulses to weight indicator where weight is recorded.

Indicator may be mounted directly next to storage tank or anywhere up to 1000 feet away. Any number of tanks may be read from one indicator.

Indicator has automatic fill position, automatic empty position and a total position. To find total amount of product in any tank, simply set dial on total and press tank selector button.

To load or unload a tank, set dial on automatic fill or empty. Turn knob untill number of pounds to be loaded or unloaded shows on pound indicator. Push tank selector button and tank begins to load or unload automatically.

When number of pounds on indicator has been reached, load cell automatically shuts off pumps which carry product to or from tank, as well as to other processing equipment, and closes valves.

Load cells, which are precise to ¼ of 1% of full scale,

(*Continued on next page*)

You test fast with this lowest-cost Abbe!

B&L Abbe-3L Refractometer tests purity and concentration with top accuracy. Reads refractive index to .0005; estimates to .0001. Reads dissolved solids to .2%; estimates to .1%.

Fastest, easiest operation ever. Upfront horizontal prism loads or wipes in a wink. You can actually complete several tests a minute!

Lowest-cost Abbe. You pay only $745 for Abbe-3L . . . less than 29¢ per working day for the first ten years of its long trouble-free life.

Here are a few of the many areas where B&L Abbe-3L Refractometers are standard test equipment:

Education
Research
Development

✶

Organic Chemicals
Solvents
Glass
Oil Contamination
Hydraulic Fluids
Petroleum Derivatives
Plasticizers
Chlorinated Solvents
Silicones
Nylon
Cocoa and Chocolate
Salt Solutions
Polymers
Proteins
Waxes
Essential Oils
Peroxide Solutions
Coffee Solids
Polyester Resins
Paint Solvents
Pharmaceuticals
Biologicals
Flours

BAUSCH & LOMB OPTICAL CO.
60646 St. Paul St., Rochester 2, N. Y.

☐ Send me Abbe-3L Catalog D-280.
☐ I'd like a demonstration.

NAME .....
TITLE .....
COMPANY .....
ADDRESS .....
.....

BAUSCH & LOMB
SINCE B&L 1853

5154 on Reader Service Slip.

Four of the eight Taylor FULSCOPE* Recording Wet-and-Dry Blub controllers regulating humidity and temperature on Julian smokehouses at A. Szelagowski & Son's new Buffalo, N.Y., plant.

SZELAGOWSKI
SHELLY
BRAND
SAUSAGE AND SMOKED MEATS

A. SZELAGOWSKI & SON, INC., famed throughout Western New York for their tasty "Shelly" brand sausage products, hams and smoked meats, rely on Taylor controls to maintain their fine quality-reputation.

SHELLY WIENERS ARE WINNERS

...with an assist from Taylor

Taylor FULSCOPE Temperature Controllers also insure *exact* water temperatures in six cooking vats.

In their brand-new, super-modern Buffalo plant, each of eight Julian smokehouses has a Taylor FULSCOPE* Recording Wet-and-Dry Bulb Controller to regulate process humidity and temperature. The dry bulb control adjusts the main gas and air mixing valve to maintain a constant temperature in the smokehouse. The wet bulb control keeps humidity constant by throttling the spray water valve and positioning inlet and outlet dampers to control the amount of recirculation.

Use of Taylor controls minimizes shrinkage, shortens smoking time and cuts operating costs. Most important, it keeps quality consistently high. To learn how Taylor controls can help you, call your Taylor Field Engineer or write for **Catalog 500MP.** Taylor Instrument Companies, Rochester, N.Y., or Toronto, Ont.

*Reg. U.S. Pat. Off.

Taylor Instruments **MEAN ACCURACY FIRST**

5155 on Reader Service Slip.

(*Continued from preceding page*)

will weigh tanks from 500 to 8000 gallons.

(Load-A-Matic, automatic weight control system for storage tanks, is a development of Cherry-Burrell Corp., 2400 Sixth St., S.W., Cedar Rapids, Iowa.)

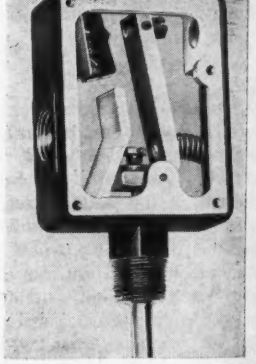
For more information circle 5156 on Reader Service Slip.

Thermostat designed for premium operating space

Compact thermostat, the size of a regular pack of cigarettes, is designed for installation where space is at a premium. Among applications, unit may be used either as an on-off control or as a high temperature alarm.

Basic instrument has a range of 150 to 600 F.

It operates on principle of differential expansion of solids, with an operating differential of approximately ±1½ degrees.



Temperature settings are made with internal adjusting screw shown at top of photo

Head of thermostat is housed in a cast aluminum weather-proof case. Differential tube assembly is of stainless steel. Unit is for local mounting and may be furnished with flanged or threaded fittings.

(Model M-1C thermostat is a product of Burling Instrument Co., 16 River Rd., Chatham, N. J.)

For more information circle 5157 on Reader Service Slip.

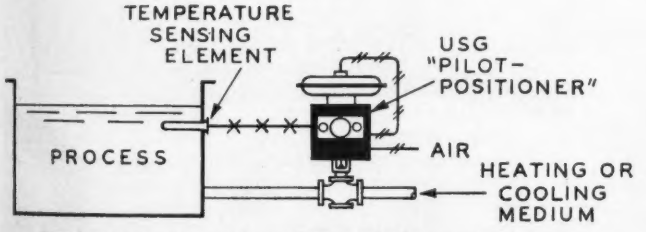
Indicating Controller Serves as Valve Positioner

COMBINED, two-in-one instrument, in one valve-mounted unit, functions as an indicating controller and a valve positioner.

It functions as an indicating pneumatic controller for temperature or pressure. As a valve positioner, it amplifies air power to provide accurate and rapid positioning of a pneumatic-operated control valve.

Instrument is basically a modification of an indicating pneumatic controller. In place of pneumatic feedback from a bellows assembly, as used in most such controllers, it employs mechanical feedback from the valve stem through a lever system.

Results of this action is to force valve to assume a position proportional to controlled variable.



Rapid, sensitive response is one feature of valve-mounted instrument

Instrument has application where conditions such as the following exist:

1. Valve may stick because deposits tend to build up on the seat.
2. Valve stem is subject to friction because packing gland is tightened to prevent leakage.
3. Large, unbalanced forces act on valve stem because of fluid pressure on plug area of a single seated valve (particularly where tight shut-off is required).
4. Valve should respond to small changes in controller output air pressure (in the order of 0.2 psi).
5. Valve should respond rapidly, through its full travel if necessary.
6. Smaller valve topworks can offer significant savings.

Combined instrument can be mounted by valve manufacturer on most makes of diaphragm motor valve, or certain other types of pneumatic operators, and requires only one air supply. This saves appreciably on installation and maintenance costs. Case measures 8½" square.

(Pilot-Positioner, two-in-one instrument which functions as an indicating controller and a valve positioner, is a development of United States Gauge, Division of American Machine & Metals, Inc., Sellersville, Pennsylvania.)

For more information circle 5158 on Reader Service Slip.

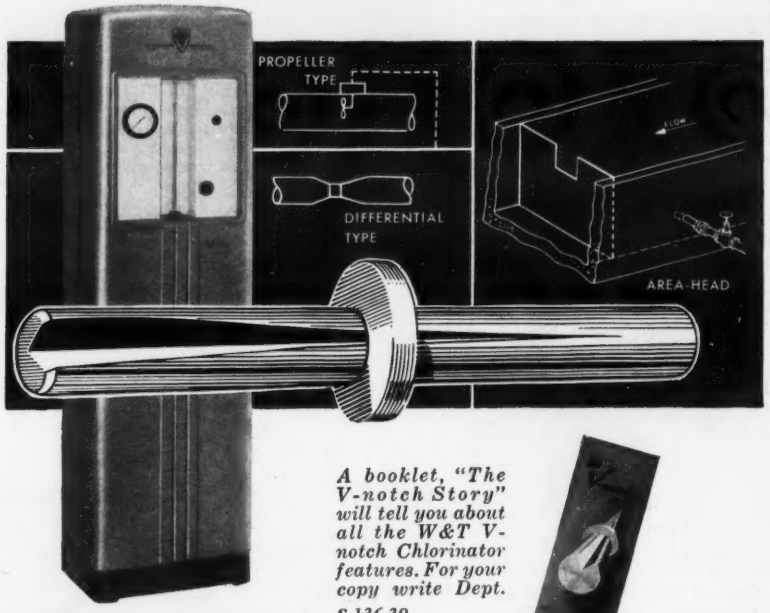
the V-notch ready and waiting for your signal

Lots of jobs are done better automatically. Changing chlorine feed rate is now one of them. With the V-notch...the straight line metering action of the plug through the ring makes automation simple.

Merely by adding, not adapting, a W&T V-notch Chlorinator can give you any degree of automatic control you want—step rate, start-stop, program, proportional, even residual control.

With a V-notch Chlorinator any signal from any primary metering device can control chlorine feed. So anyone can afford automation.

And, of course, the right plastics make the whole chlorinator chlorine-proof.



A booklet, "The V-notch Story" will tell you about all the W&T V-notch Chlorinator features. For your copy write Dept. S-136.38.

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

W&T DRY CHEMICAL FEEDERS

For Accurate Feeding Of Water Treatment Chemicals

Full line of wide range dry chemical feeders capable of controlling a few ounces to 3000 lbs. per minute.

Write for Bulletin M-38 for complete Dry Feeder information.

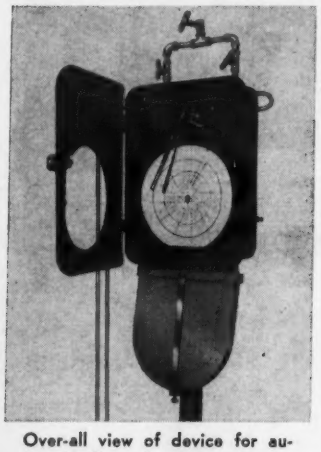
WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

5159 on Reader Service Slip.

automatically changes recording charts

Utilizes, disengages, stores as many as 40 circular charts in a single recorder

Device for automatically changing circular recording charts can utilize as many as 40 charts in a single recorder. Unit discharges the charts, one by one at virtually any desired time, date or frequency. (See drawing) As charts are discharged, they are dropped by gravity into a self-contained storage box.



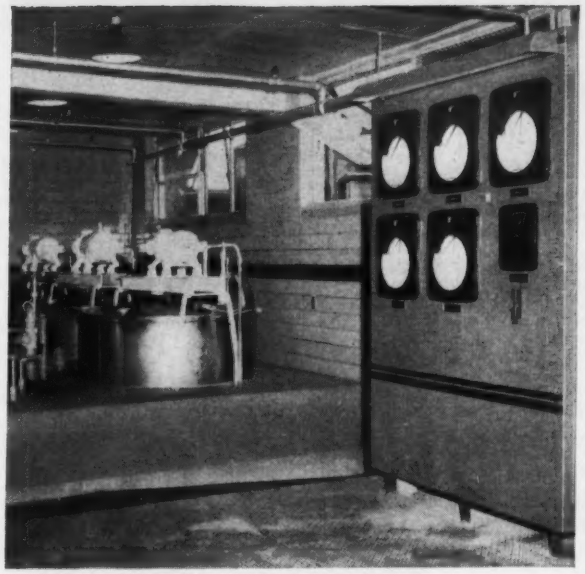
Over-all view of device for automatically changing circular recording charts. Note storage container at bottom which is mounted at a slight angle, causing charts to stack themselves in perfect order

Time and labor costs for routine chart changing are greatly reduced.

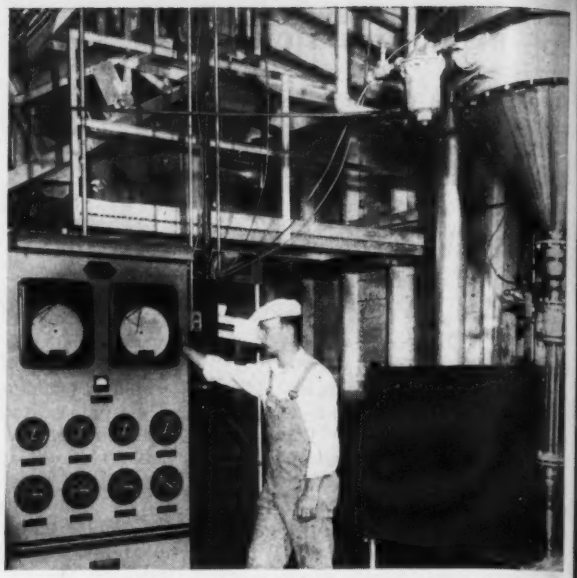
Designed for use on all standard recorders using circular charts of any diameter or thickness, unit uses only a minute portion of available clock power.

Any number of field or plant recorders can be serviced without manual attention, at the identical moment, making it possible to correlate charts with master meter charts without multiple computations.

Automatic device may be furnished with either spring-



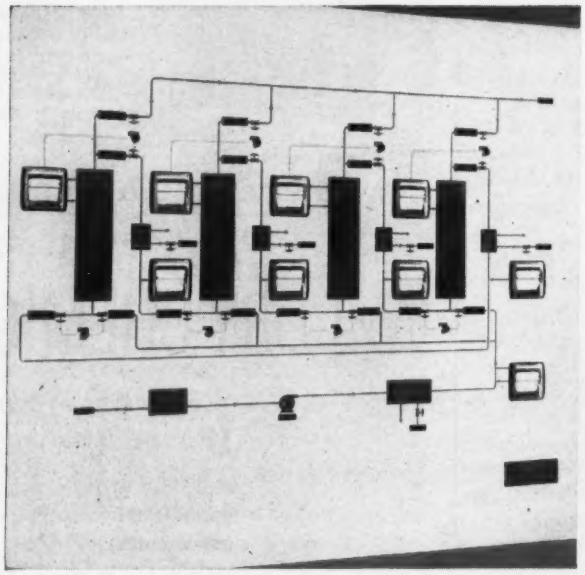
MILK PROCESSOR – TENNESSEE Foxboro 6-instrument cabinet controls milk fore-warmer temperatures with Dynalog* Electronic Instruments. **2-, 4-, or 6-instrument cabinets** can be installed individually, or in combination — provide complete centralized control of any food process, large or small.



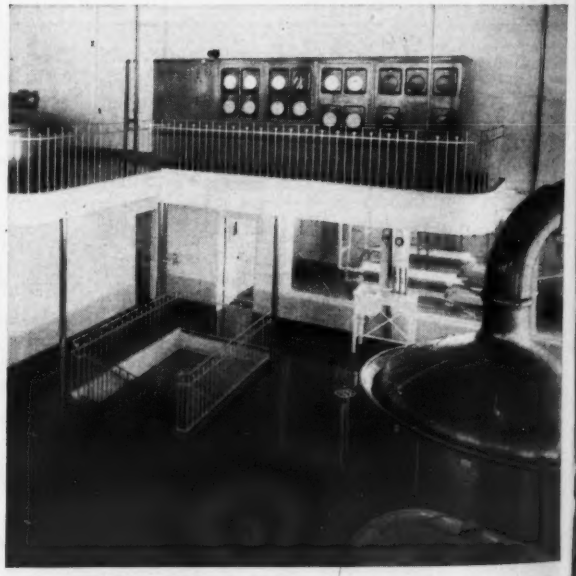
FOOD PACKER – CALIFORNIA Automatic control of process evaporator is easily handled from the Foxboro cabinet. Integrated control system, specifically designed for the process by Foxboro, assures perfect quality and flavor of concentrate. **Grouping of related controllers and indicators** results in easier operation, simpler maintenance.

For any food plant -

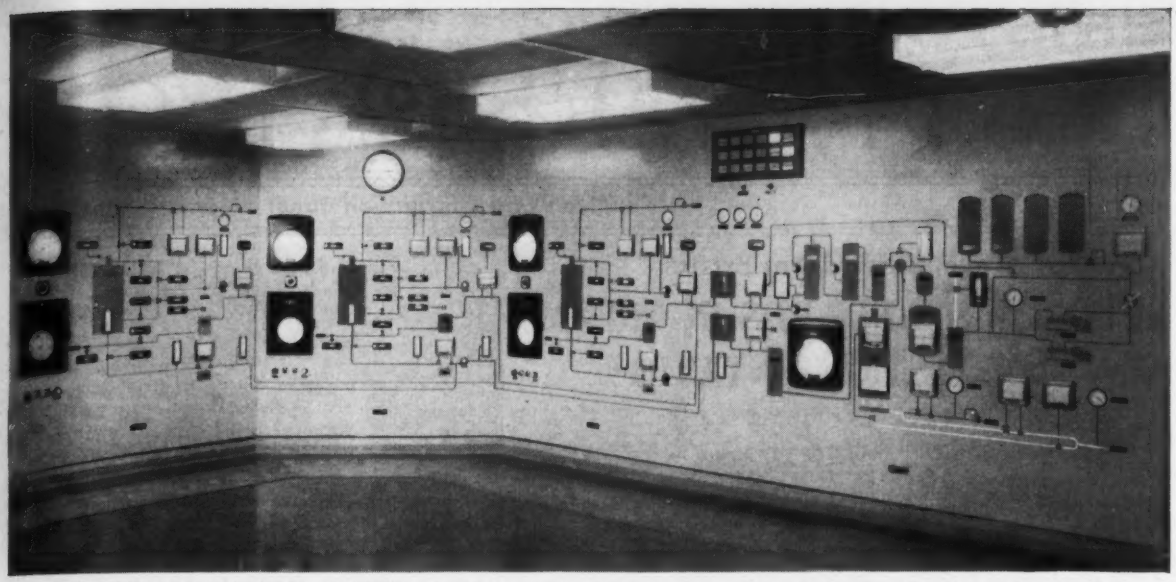
an integrated Foxboro



COFFEE PROCESSOR – NEW YORK This centralized control panel has its graphic diagram painted on a formica plastic background, permitting easy modification of the diagram should process changes occur. **Painted formica panels** are only one of several types of graphic control panels available from Foxboro.



BREWERY IN MEXICO Complete Foxboro centralized control system simplifies operation of rice and mash cookers, hot and cold water tanks, lauter tubs, and brew kettles. Air tubing is neatly formed and fitted to permit easier servicing and maintenance. System was designed and assembled in Foxboro, Mass. — shipped in sections for installation in Mexico.



VEGETABLE OIL REFINERY — ILLINOIS Complete control of hydrogen generation units is accomplished from this graphic panel. Small-case Consotrol* Recording-Control Stations are installed right in the process diagram — linked to their appropriate measurement and control points by colored lines — resulting in easier operation and better process supervision. **All back-of-panel connections** are plainly marked for quick and easy identification.

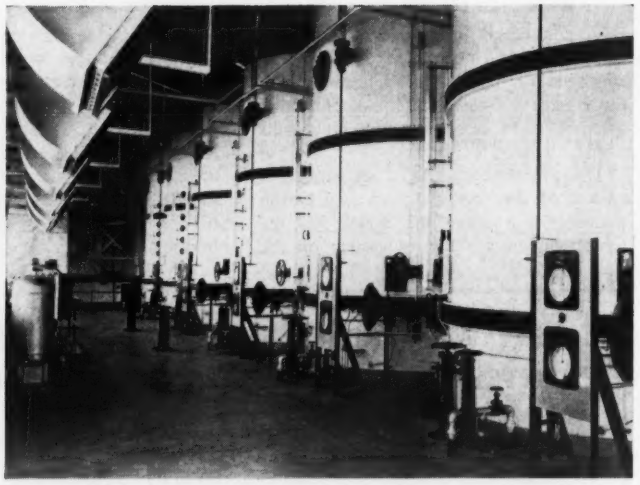
for every food process

Packaged Control System

Complete packaged control systems providing centralized operation from one convenient location! It's the trend that's streamlining the efficiency of many food plants today.

Foxboro custom-engineered packaged control systems make it easy. Years of application engineering experience insure that instruments are exactly suited to your process—shipped already mounted in cabinets or panels, completely piped and wired. Only power and process connections are needed to put them into operation. This simplified installation, plus the operating convenience and low maintenance of these custom-engineered control systems keep cost at a minimum.

Full details on Foxboro Packaged Control Systems are now available in a new series of specification sheets. They'll give you complete information on the design and construction of cabinet and panel units . . . as well as Foxboro's rigid requirements for high quality piping and wiring. Write for them today. **The Foxboro Company, 9210 Neponset Avenue, Foxboro, Massachusetts, U.S.A.** *Reg. U.S. Pat. Off.



SUGAR PLANT — CALIFORNIA Local control for these vacuum pans is provided by individual panels for better operator supervision. Heavy gauge steel panels protect instruments and accessories from accidental damage.

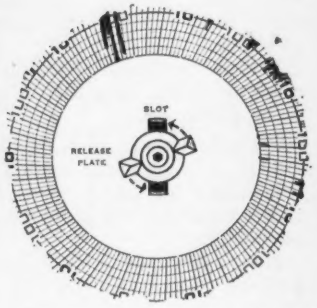
FOXBORO REG. U.S. PAT. OFF. **INSTRUMENTATION FOR THE FOOD INDUSTRIES**

5160 on Reader Service Slip.

wound, electric or gas operated chart drives.

(Automatic Meterman, for automatically changing circular recording charts, is a development of Maeder-Squier Company, Box 5145, Dallas 22, Texas.)

For more information circle 5161 on Reader Service Slip.



Unit consists of a spring loaded chart plate, a main shaft and a release arrangement.

Specially notched and slotted charts are secured by release plate until time for first chart to be changed.

Shaft and release plate are geared to rotate in precise coordination with charts. As time cycle on first chart is completed, release plate and center slot of first chart dovetail, allowing first chart to be pushed off and dropped into storage container.

The instant the first chart is dropped, release plate has arrived at a position perpendicular to center slot in second chart. Sequence repeats itself on all consecutive charts.

Instrument oil stays fluid over a wide temperature range

A medium viscosity diester oil, engineered specifically for use in precision instruments, offers a significant increase in temperature range and lubricant life over customary petroleum-based lubricants.

Suggested applications include pneumatic systems, hydraulic systems, electrical control boxes, electric motors, precision bearings and all types of instruments and timers.

Completely compatible with ordinary lubricants, it offers penetration comparable to the finest penetrating oils. Lubri-

(*Continued on next page*)

(*Continued from preceding page*)
cant has a wide temperature range from —75 F to 350 F. Evaporation rate is so low that it remains fluid up to 100 times longer than ordinary instrument oils.

It has remarkable oxidation stability, is non-gumming and will not leave harmful deposits. Oil seeks out metal, clinging to surface in a fine film that protects delicate parts from humid and salt conditions.

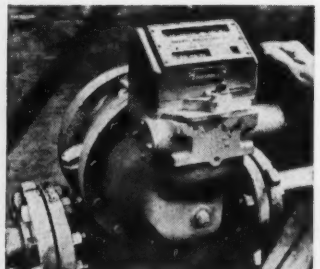
Oil is available in pint, quart or gallon cans and in 5 or 55 gallon drums.

(Anderol L-281 Instrument Oil is a product of Lehigh Chemical Company, Industrial Lubricants Div., Chestertown, Maryland.)

For more information circle 5162 on Reader Service Slip.

In-line flow meter needs no elbows or manifolds in horizontal piping

In-line flow meter, with special steel case, eliminates need for manifold or 45 degree elbows when used on horizontal piping lines. This cuts down number of connections needed, makes meter more compact and simplifies installation.



In-line meter is shown with large reset register. Meter is also available with non-reset, small reset or printing register

Elimination of elbows also means a minimum of flow resistance. Thus, power needs are reduced and savings may be realized because smaller motors can be used to drive pumps.

Design of meter provides a

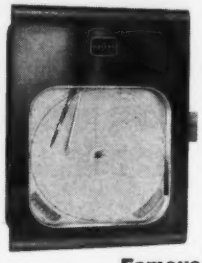
BRISTOL'S INSTRUMENTATION

★ *News and information about automatic controlling,*

Advanced developments from Bristol

SET NEW STANDARDS IN PNEUMATIC CONTROL INSTRUMENTATION

• assure dependable accurate control • easy servicing • convenience in use



New ideas at Bristol are revolutionizing some of the older concepts of pneumatic control instrumentation. These giant strides are making obsolete many designs that are only a few years old—but are already outmoded by modern Bristol equipment that gives better control of process variables and sets new standards for dependability.

Take, for example, the new Bristol Series 500 Wide-Band Pneumatic Controllers. These recent products of Bristol engineering and development are outstanding for stability of output on difficult process-control problems. They incorporate many advanced features, such as reset action stops and a true zero derivative setting, which are found on no other line of pneumatic controllers.

Best maintenance record

Basic simplicity, accurate design, closely held manufacturing tolerances make one single adjustment all that's necessary on the Bristol 500—even after complete disassembly and reassembly with replacement parts.

This practically "built-in" calibration is typical of the foresight and engineering planning that make the Series 500 the easiest pneumatic control system on the market to service. Cut-and-try methods are eliminated. No special maintenance skills are required. All parts are completely interchangeable. The result: a truly superlative maintenance record in thousands of industrial plants.

Famous Bristol measuring elements

The heart of an instrument, whether it be for recording, controlling, or telemetering, is its sensing and measuring system. That's why, for the 70 years of its existence, the Bristol Company has thrown its resources into the development of measuring systems.

Today, Bristol has longer, wider experience in this field than any other instrument company. Bristol leadership in measuring elements is recognized and respected the world over.

Bristol instruments come with the widest selection of high-quality measuring elements available for any line of instruments. **Temperature, pressure, vacuum, draft, absolute pressure, liquid level, flow, humidity, density, pH, are just a few of the variables that can be measured—plus a large number of other variables measurable with air-controlling electronic potentiometers and bridges.**

SEVERAL HUNDRED STANDARD MODELS MEET EVERY PROCESS REQUIREMENT INCLUDING:

These problems:	These operating modes:
1. Cascaded control	1. Fixed narrow band (on-off)
2. Selective control	2. Proportional—to 100% and to 30%
3. Ratio control	3. Reset with wide band—to 400%
4. Time program control	4. Derivative (rate)
5. Pneumatic transmission	5. Reset plus derivative

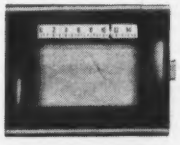
Bristol pneumatic control assures uniform ceramic tiles

Uniform size, color, texture and strength of ceramic tiles depend, among other things, on exact control of firing temperature. That's why Orange County Ceramic Tile Manufacturing Company, Huntington Beach, Cal., makers of the brilliant SUNSET tile line for home and industry, use Bristol Dynamaster* Electronic Pyrometers for accurate automatic control of kiln temperature. Precision automatic control insures an exceptionally uniform product and frees skilled production line supervisors from the need of constant checking.

*T.M. Reg. U. S. Pat. Off.

Electrical measurement with air control, electrical control, digital or analogue read out

Bristol Dynamaster* potentiometer and bridge instruments are the most widely versatile electronic instruments on the market today. Models are available not only for precision pyrometry with thermocouples, radiation pyrometers or resistance thermometers, but for measurement, recording and electrical or air control of pH, speed, voltage, current, power, resistance, strain-gauge output and many other variables. An extremely wide variety of attachments and accessories is available—including auxiliary transmitting devices, digital encoders, alarm contacts, etc. Round or Strip charts (see photos below). Most models available for standard 19" relay rack-mounting.



NEWS AND NOTES

recording and telemetering instruments from Bristol

INSTRUMENTS HELP EXTRACT STRATEGIC MANGANESE

These Bristol Series 500 recorders and recorder-controllers are keeping tabs on the exclusive manganese extraction process used by Manganese Chemical Company, Riverton, Minnesota, one of the few domestic producers of chemical manganese compounds. The Bristol air-control instruments monitor reducing gases, cooling gases, indicate leach liquor liquid levels and record vital temperatures in the production process. The plant is in operation 24 hours a day, 7 days a week and the Bristol 500's stand up to this grueling service with the same outstandingly high reliability that they are showing in hundreds of other chemical plants throughout the world.

500's CONTROL OIL TEMPERATURE FOR STEEL ROLLING

These Bristol Series 500 instruments are two of a number used to control the temperature of lubricating oil supplied to the rolling mill main bearings on the number one rod mill at the Cuyahoga Works of U. S. Steel's American Steel & Wire Division.

The instruments maintain temperature of the lubricants at 100°F for the entire system by controlling the amount of cooling water being used.

Bristol Series 500 instruments are noted for their excellent maintenance record under severe environmental conditions, can be maintained without special skills, special tools. What's more, Bristol service engineers, operating out of the main plant, four branch plants, and from 44 principal cities, are available to help you apply series 500's (or any Bristol instruments) and assure you of their long, continuous, trouble-free service.

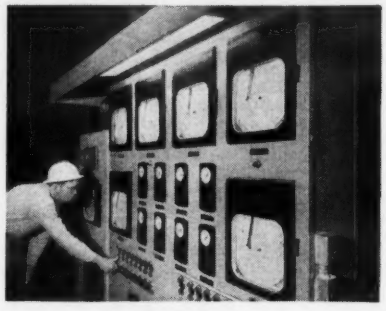
BRISTOL TRAIL-BLAZERS IN PROCESS AUTOMATION

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

5163 on Reader Service Slip.

3 big reasons for air-control in this plant

Sometimes it's a toss up between air or electronic control. Not so in Lithium Corporation of America's Bessemer City, North Carolina, plant for extraction of lithium from low-grade ore. Three cogent reasons suggested air control for a large part of this operation: (1) positive pressure of 15 to 20 psi would protect the system from humidity, dust and corrosive fumes, (2) short transmission lines (none longer than 1100 ft., most only 200 to 300 ft.) would insure positive, lag-free operation and (3) cost of an air-control system for their $7-million plant was estimated at only $150,000 to $200,000.



Have any doubts about what control system you should use? Get Bristol's absolutely unbiased recommendation: As makers of *all types* of electronic and pneumatic process control instruments, Bristol is in a unique position to help you get the instrumentation that's exactly right for your needs.

8.49

ASK FOR COMPLETE DATA

We'll be glad to send you complete technical information on any Bristol instrument. Or trained Bristol field engineers, familiar with the problems of your industry, will welcome the opportunity to discuss a complete, integrated system of measurement, recording or control—pneumatic or electronic—for your plant. Write The Bristol Company, 143 Bristol Road, Waterbury 20, Conn.

steady ease of motion because liquid moves through meter in a direct rotary "flow forward" path from inlet to outlet. Minute clearances between revolving measurement parts and chamber wall create effective liquid capillary seals, eliminating costly, part wearing, metal-to-metal contact.

Meter measures flow rates ranging from 20 to 100 gpm. Working pressure is 300 psi with a series 30 flange and 215 psi with a series 15 flange.

Standard accessories available are strainers, register extensions, swivel adapters, impulse contactors and temperature compensator.

(In-line Rotocycle Meter is product of Rockwell Manufacturing Company, Meter and Valve Div., 400 N. Lexington Ave., Pittsburgh 8, Pa.)

For more information circle 5164 on Reader Service Slip.

Automatic weight control reduces bread giveaway

Automatic weight control to reduce bread giveaway is described and illustrated in 6-page folder. Folder explains how machine works in conjunction with any divider to automatically reduce overscaling in make-up of dough pieces.

Individual photographs depict operations performed by equipment to accurately weigh each dough piece and automatically correct or reject over and underweights.

Typical performance graphs are included which compare average load weights with and without the automatic weight controller.

Specifications are given on speed, weight range, floor-space, along with a diagram showing one of the numerous arrangements for installing unit.

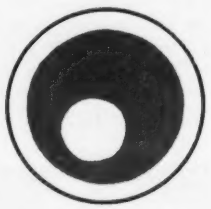
("Automatic Bread Weight Control", 6-page folder, is available from FMC Packaging Machinery Division, 4900 Summerdale Ave., Philadelphia 24, Pa.)

For your copy simply circle 5165 on Reader Service Slip.

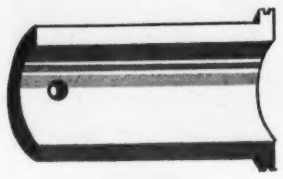
HOW TO DESIGN THE PERFECT FLOWMETER FOR LIQUID FOODS

Suppose you were given the job of designing *the perfect instrument* for metering food flows. You would probably start out by compiling a list of general specifications that goes something like this . . .

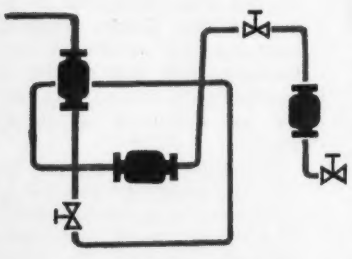
☐ meters practically all kinds of fruit juices, beer, milk, slurries, syrups, molasses, and other food flows



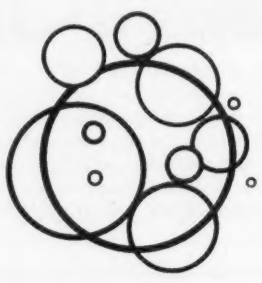
☐ as completely free of all obstructions as a regular run of pipe



☐ completely sanitary and corrosion-proof, requires no maintenance



☐ no drop in pressure, unaffected by piping configurations or valve placement, measures full pipe flow in either direction without accessories



☐ available in pipe sizes from 1/10" to 72"

☐ accuracies better than ±1% of full scale—independent of viscosity, consistency, density, or turbulence

Such a flowmeter has already *been* designed, built and proven in hundreds of applications. It's the *F & P Magnetic Flowmeter*. You can get the complete story by contacting the F&P field engineer nearest you, or write for Catalog 10D1416. Fischer & Porter Company, 4009 County Line Road, Hatboro, Pa. In Canada, Fischer & Porter (Canada) Ltd., 2700 Jane Street, Downsview, Ontario.

FP FISCHER & PORTER COMPANY *COMPLETE PROCESS INSTRUMENTATION*

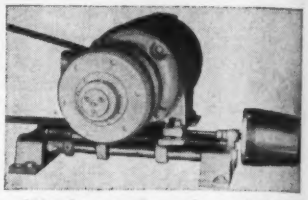
5166 on Reader Service Slip.

Actuator for sliding motor base drives

High torque, rotary actuator for remote and automatic control of industrial equipment, provides low-cost control for variable speed drives, valves, pumps and reactors.

Actuator is available with a built-in precision potentiometer which is gear-connected to output shaft through a wide choice of ratios so that from 1/6th to 40 shaft revolutions correspond to full-scale control.

Potentiometer provides remote indication of position on a dial or meter, or serves in automatic control circuits.



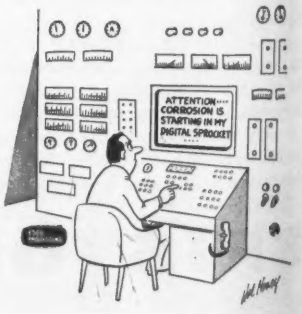
Weather-proof and explosion-proof enclosures are offered for actuator

A typical unit delivers 200 in-lb at 50 rpm for remote or automatic control of sliding motor base of variable pitch sheave drives.

Complete line of automatic punch card and programming controls are available for use with actuators.

(SM-18 Shaftrol Actuator is product of The Jordan Co., 3235 W. Hampton Ave., Milwaukee 9, Wis.)

For more information circle 5167 on Reader Service Slip.



Flexible foamed plastic insulation

is easy to apply . . . reapply

Closed cellular structure serves as built-in water vapor barrier

Tube and sheet form for refrigeration and up to 160-200 F

ELASTIC, rubber-like nature of insulation makes pipe covering easy to install (see photo at below left). It can be used in any shape or conformation, yet is so resilient that when removed, it will spring back into its original shape.

Insulation doesn't rub off, chip or crumble. Because it is clean and odorless, it can be applied while department or process is in operation.

Foamed plastic material has closed cellular structure, which prevents air and moisture penetration. Thus, no additional vapor barrier is necessary.

For large tanks, irregular vessels, and large-diameter piping, foamed sheet is used. On "hot bodies," the sheet will withstand temperatures up to 160 F. Pipe insulation can be used on lines to 200 F.

Foam insulation compares in insulating value to corkboard (see table right). Condensation is prevented under normal indoor conditions (max. of 85 F and 70% RH) by: ¾ in. nominal thickness on lines down to zero F; ½ in. thickness down to 32 F; and ⅜ in. thickness down to 50 F.

Pipe insulation is made in 6 ft sections having an ID from ⅜ to 3 in. IPS.

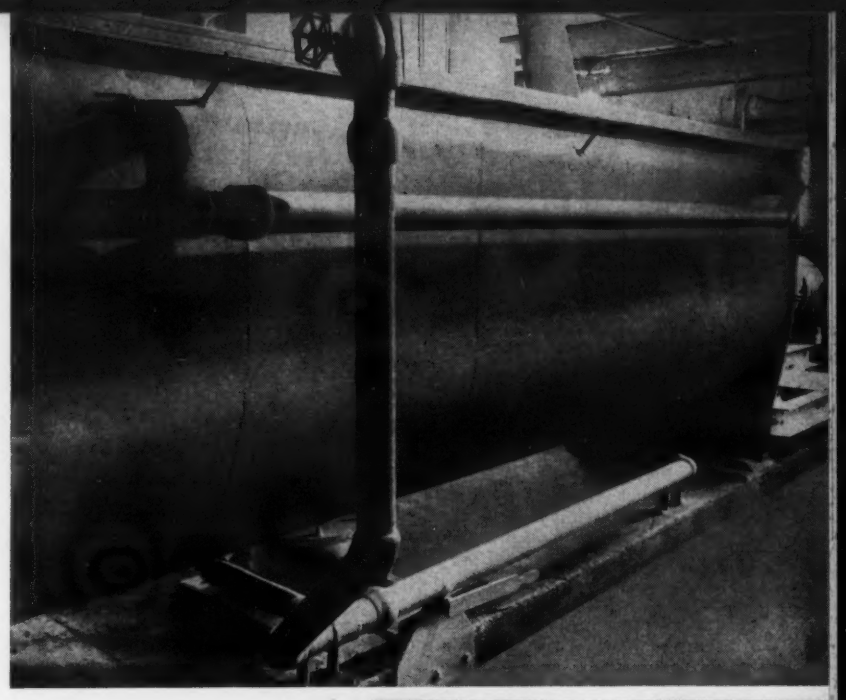
Sheet material is made in 30 in. by 36 in. sheets and in thicknesses of ⅜ in. to ⅞ in. For very low temperatures, it can be used in layers.

Physical Characteristics

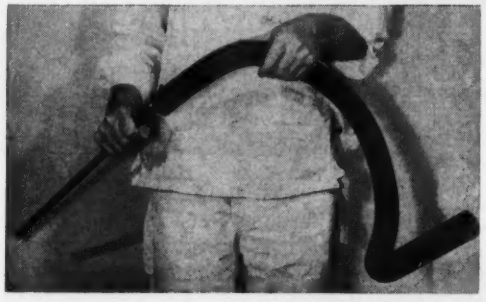
Density: 7.5 lb/cu ft.
Thermal Conductivity (k-factor): 0.28 at 75 F and 0.38 at 120 F Btu/sq ft/hr/°F/in. [For corkboard of density 7.0 lb/cu ft, k-factor is 0.27 at 90 F.]
Water vapor transmission (Perms): less than 0.1 Grains/in./sq ft/hr/in. Hg.
Air transmission: less than 0.03 cu ft/in./hr/sq ft at static pressure of 10 in. Hg.
Water absorption: 3.9 per cent by volume, 60 days immersion.
Fire rating: self-extinguishing.

(Armaflex is a product of the Armstrong Cork Company, Lancaster, Pa.)

For more information circle 5168 on Reader Service Slip.

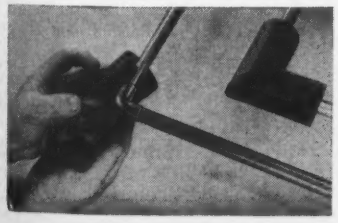


Vessel shown above is used for cooling dextrine in a brewery. Note smooth, sanitary surface of insulation on tank and accessory piping. Tanks, irregular-shaped vessels or very large-diameter piping are insulated with sheets of foamed plastic. Tank to be insulated and insulation are first prepared by application of adhesive, which is allowed to dry to tack-free stage. After being cut to fitted size, sheet is placed on vessel as shown at right, then firmly pressed on with roller



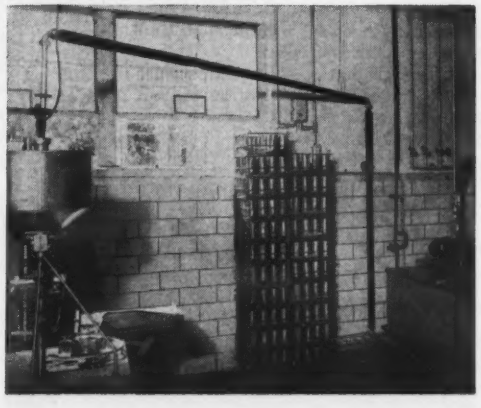
On new lines, pipe cover is merely slipped on prior to assembly, as shown at left. Flexible insulation can also be slipped on gradual bends and, without mitering, on angles up to 45°

Insulation for ells and other fittings is easily made. Tubing is simply cut to length and necessary angle with sharp knife in miter box, then cemented. For installation on line, it is slit longitudinally, snapped on pipe or fitting and cemented at joint



On existing straight lines, insulation is slit longitudinally, and snapped over lines. Slit is sealed with waterproof adhesive. Butt-cementing of straight runs against fittings finishes installation

In whipped-cream factory, about 15 ft of stainless steel pipe are used to move cream from holding tank, where it is stored at 35-38 F, to filling machine. Insulation on line must withstand daily scrubbing to meet sanitary requirements. Pipes and insulation are taken apart and cleaned in hot detergent solution

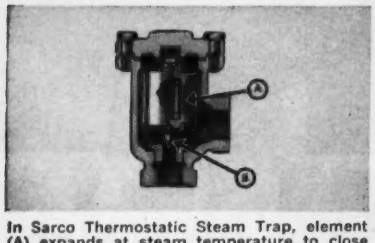


Full-range steam traps cut high cost of steam pressure variations

By John W. Ritter, Test Engineer
SARCO Company, Inc.

While boiler room economics dictate that boiler pressures remain constant, the equally sound economics of batch processing may decree that pressures at the equipment vary with the requirement of the process. The attempt to choose a steam trap that is all things to all conditions may result in installing traps that operate inefficiently at either extreme of their pressure range or that require adjustment every time the operations sheet calls for another pressure-temperature setting. Orifice traps represent a somewhat more rational approach to the problem, but often at the price of a continuous discharge of steam, particularly at the low pressures of start-up and shut down. Compromise, adjustment, and steam waste all spell inefficiency in the utilization of steam.

Production-Planned steam trapping, on the other hand, improves efficiency by the use of properly designed and installed thermostatic steam traps. Such traps employ the expansion and contraction of a thermostatic element to operate the discharge valve.

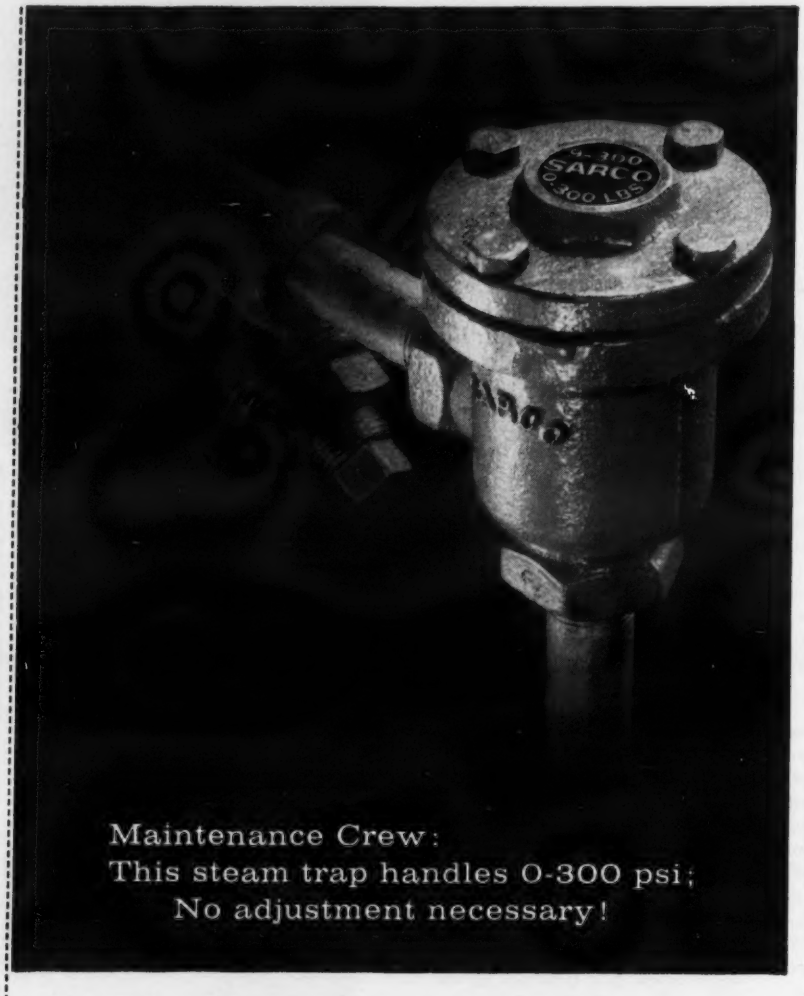


In Sarco Thermostatic Steam Trap, element (A) expands at steam temperature to close valve (B), contracts to permit discharge of condensate.

In the Sarco "Balanced Pressure" Thermostatic Steam Trap a volatile fluid is sealed inside a metal bellows that opens or closes the valve as it contracts or expands with condensate temperature. Near steam temperature, evaporation of the fluid creates an internal pressure greater than steam pressure in the trap body, and the expanding bellows seats the valve. When the condensate cools, the element contracts and opens the valve.

It is evident that at steam temperature pressure inside the element is higher than steam pressure, no matter how the latter may vary. Thus, the trap compensates automatically for variations in pressure.

5810B



Sarco "Balanced Pressure" Thermostatic Steam Traps cut trap maintenance costs and simplify parts inventory. Why? Because the same bellows, head and seat handle steam pressures up to 300 psi — without any need of adjustment for variations in load or pressure.

Other advantages: unmatched capacity/cost ratio (1" size discharges 9,650 lbs/hr. at 10°F below steam temperature, 125 psi). This trap can't air-bind and, when installed with free discharge, can't freeze.

Long life and reliable performance are assured by an exclusive Sarco process for fabricating the one moving part — the thermostat — and by steam-testing of every single trap at maximum rated pressure.

Write for "Literature Kit 1A" today. And remember, Sarco can give you impartial advice on *Production-Planned* steam trapping because . . .

SARCO
COMPANY, INC.
635 Madison Ave., New York 22, N. Y.

Only Sarco makes all 5 types:
Thermostatic • Liquid Expansion • Float Thermostatic
Thermo-Dynamic • Bucket

STEAM TRAPS • TEMPERATURE CONTROLLERS • STRAINERS • HEATING SPECIALTIES

5169 on Reader Service Slip.

Flooring samples of oxychloride cement

Flooring can be used in new construction or modernization work. In the latter, it may be installed over wood or concrete subfloors. Thickness of only ½ in. is sufficient in most cases.

Cement is dense, dustless and non-absorbing. Complete information on its characteristics and condensed specifications are given in 4-page catalog.

Catalog and technical data are included in floor-sampling kit which has four colorful samples.

("Acmetyle" flooring sample kit is available from the Acme Asbestos Covering and Flooring Company, Dept. FP-4, 250 N. Elizabeth St., Chicago 7, Illinois.)

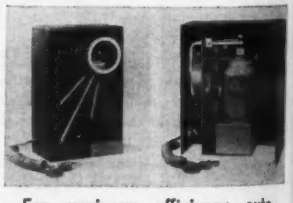
For more information circle 5170 on Reader Service Slip.

Controls insects with over 3200 metered shots

Automatic dispenser needs 12 oz refill only every 34 days

Uses: For fly, gnat, mosquito or other flying-insect control in food processing areas and grain storage.

Features: Measured amount of spray from automatic unit is released every 15 minutes, 24 hours per day. One 12 oz container lasts 34 days and when empty can be replaced in less than a minute.



For maximum efficiency, automatic insect dispenser should be mounted high on wall

Single unit will keep 6000 cu ft enclosure free of flying insects.

Description: Pyrenone-base insecticide dispensed is non-

(*Continued on page 112*)

Association News

American Institute of Nutrition

a professional society of nutritional scientists, has elected as member Dr. David C. Herting, senior research chemist in the biochemistry department of Distillation Products Industries division of Eastman Kodak Company.

His research has been on digestion of saturated or concentrated fats and their influence on life processes, and on the effect of vitamin D on gastric secretion and animal growth.

Corn Products Company

has purchased the trademark of Old Manse sirup from the Chicago firm of Oelerich & Berry, Inc. Distributed principally in the Chicago area, Old Manse will be packed by Corn Products at its Argo, Ill., plant.

Quartermaster Food & Container Institute

for the Armed Forces, Chicago, announces appointment of David H. Rest as director of the Food Radiation Preservation Division. Rest had been associate director of the Division, and had worked on the planning of the Army Ionizing Radiation Center, now underway at Stockton, Calif.

National Safety Council's

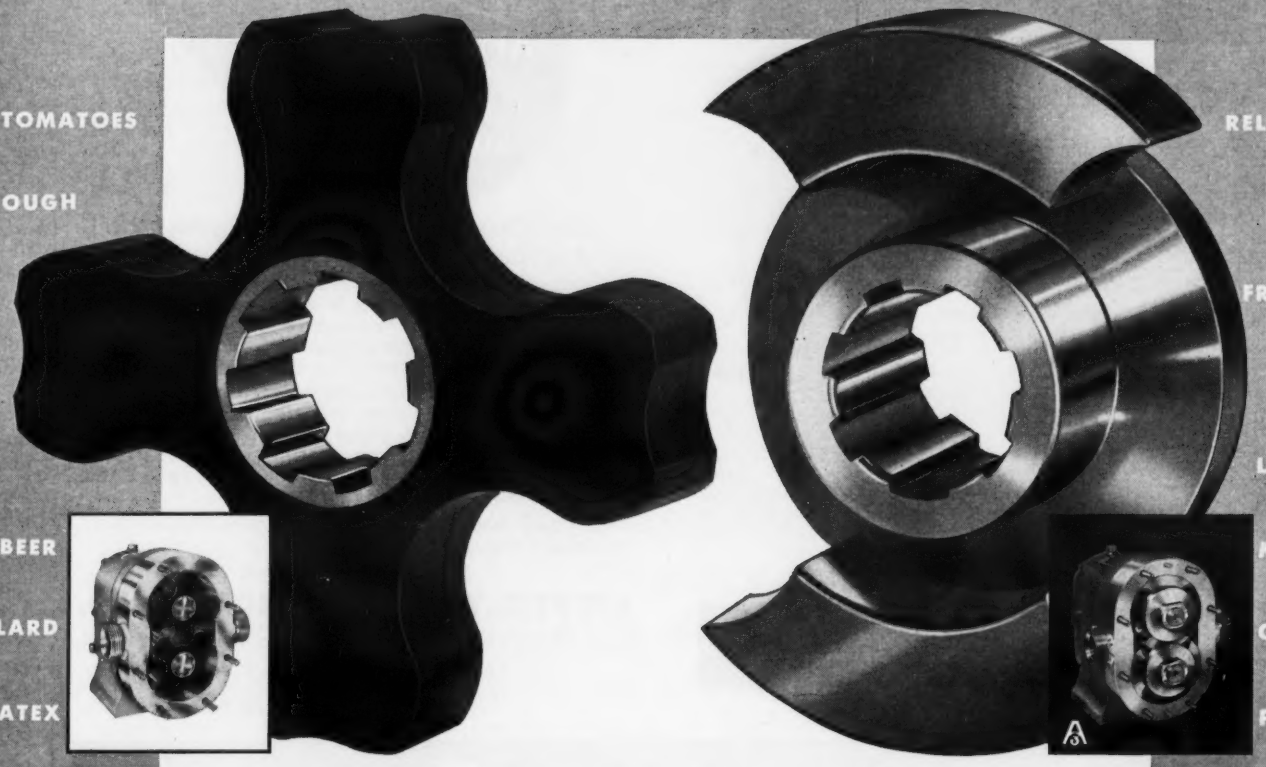
47th National Safety Congress will include a round-table discussion on use of fumigants, rodenticides and insecticides in grain handling and milling. Also of interest to food processors will be the paper on "Automatic Palletization and Materials Handling in a Modern Brewery," by Lewis F. Forde, bottling department superintendent of Stroh Brewery Company, Detroit.

(*More on page* 123)

For more information on product at right, circle 5171 see information request blank opposite last page.

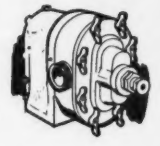
Which Pump is best for your Product?

TOMATOES DOUGH BEER LARD LATEX MILK CHEESE CORN SYRUP FRUITS CHEMICALS LARD STARCH EGGS SAUSAGE LIQUID SUGAR FROSTING MAYONNAISE COSMETICS DOUGH BABY FOOD PAINT TOMATOES RELISHES STARCH GLUE LATEX SAUSAGE PAINT MILK GLUE LARD FRUITS BEER EGGS RELISHES BEER

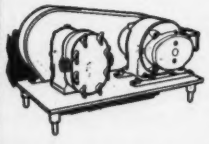


only WAUKESHA offers you a choice of rubber or metal impellers

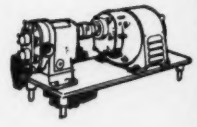
Your product demands a *specific* size and type positive displacement pump. The proper selection is the most important factor in obtaining *maximum* pump life and the assurance that your plant keeps on stream — always.



Only WAUKESHA offers you *more than* 500 positive displacement pump combinations . . . a type and size *specifically* engineered to handle your product. You select *exactly* what you need . . . no compromising — ever.

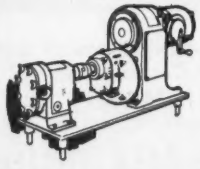


Only WAUKESHA offers you a choice of metal or rubber impellered pumps for capacities from 0 to 300 G.P.M.

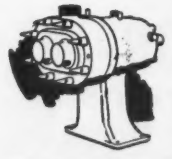


Only WAUKESHA offers you corrosion-resistant pumps in both Waukesha Metal (nickel alloy) or 316 Stainless.

Only WAUKESHA provides the specialized engineering assistance built on more than 5 decades of experience in the design and manufacture of sanitary positive displacement pumps.



Representatives in all major cities. Call your distributor or write . . . Waukesha Foundry Co., Dept. 30, Waukesha, Wis.



WAUKESHA FOUNDRY COMPANY

The largest producers of sanitary positive displacement pumps

TEST MOISTURE

in Granular, Fibrous or Semi-Liquid Materials with a DIRECT Method

1. NO CHEMICALS REQUIRED—SIMPLE TO OPERATE.
2. NO ELECTRONIC COMPONENTS INVOLVED.
3. NO MATHEMATICAL COMPUTATION NECESSARY.
4. QUICK, POSITIVE ACCURACY.
5. USE IN PLANT OR LABORATORY.
6. EQUIPMENT CAN BE UNPACKED, SET UP AND IN OPERATION IN LESS THAN TEN MINUTES.

Thousands of DIETERT-DETROIT Moisture Tellers are in daily use in the textile, chemical, foundry, dairy, cement, salt, and coal industries.

DIETERT DETROIT *30 years experience in moisture testing*

HARRY W. DIETERT CO.
9330 Roselawn Ave. • Detroit 4, Michigan

5172 on Reader Service Slip.

Cook-Chex takes the last trace of guesswork out of production control.

1. Eliminate wrong cook schedules.
2. Keep retort baskets in sequence.
3. Guard against "by-passing" retorts.
4. Provide low-cost permanent records for your cooking-plant.

Cook-Chex is the chemically impregnated retort tag that changes from purple to green *only* after your run has been properly and completely retort processed. Hang a Cook-Chex on each basket before retorting — inspect it after withdrawing. You have the full "protection" record at a glance. It's that easy — that sure.

Used by *all* major packers. Approved and recommended by cannery inspectors. Ask *them!*

Send for Free samples.

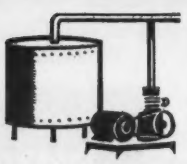
ASEPTIC-THERMO INDICATOR CO.
Dept. FP-10, 11471 Vanowen St. • No. Hollywood, Calif.

5173 on Reader Service Slip.

Steelcote
THROUGHOUT AMERICA
PLANT MAINTENANCE MANAGERS CHOOSE
DAMP-TEX
WET WALL ENAMEL
TRANSFORMS WET, ROTTING WALLS TO SANITARY BEAUTY
SEND FOR DETAILS OF NO-RISK TRIAL OFFER: Prove Damp-Tex's superiority in your own plant
This bactericide, fungicide system is a pioneer and leader in its field. Its efficient, durable performance in thousands of plants is your best guarantee of satisfaction.

FLOOR-NU
STOPS
FLOOR DAMAGE
FROM ALKALI,
ACIDS
AND HEAVY LOADS

SEND FOR NO-RISK TRIAL QUANTITY. Send for 26-lb. unit. Use half. If not satisfied return balance prepaid for credit on entire unit.



To Prevent Chemical and Water Corrosion of
EQUIPMENT
The Most Permanent Finish Is
EPO-LUX 100 (EPOXY)

Protects where chemical liquids or fumes eat up other type coatings. Dries to 75% hardness of glass yet resists chipping or cracking.

STEELCOTE MFG. CO. 3418 GRATIOT ST. ST. LOUIS 3, MO., U.S.A. RODNEY, ONTARIO, CANADA

5174 on Reader Service Slip.

maintenance

(*Continued from page* 110)

toxic when used as directed. Legal tolerances for it have been established for use on stored grains and on freshly harvested tomatoes and fruits at canneries.

Insects entering room where unit is operating encounter an effective level of insecticide in air.

Regular release of small amount of spray keeps effective dosage in air.

Dosage is controlled by special metering valve with which each dispenser is fitted. Spray is emitted through port-hole in steel case, see photo on page 110.

Weight of unit is only 5½ lb. Its overall dimensions are 9½ in. high by 5¾ in. wide and 3½ in. deep.

(Syncro-Mist Automatic Dispenser is a product of Syncro-Mist Controls, Inc., 270 Madison Ave., New York, N. Y.)

For more information circle 5175 on Reader Service Slip.

(Pyrenone insecticide concentrate is a product of Food Machinery and Chemical Corp., Fairfield Chemicals Div., 420 Lexington Ave., New York 17, New York.)

For more information circle 5176 on Reader Service Slip.

Sanitary-engineering equipment at work

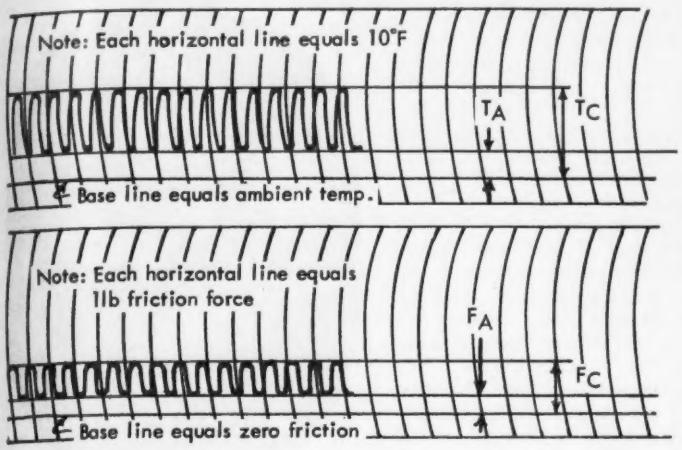
Twenty-page book contains illustrations and flow diagrams of how sanitary engineering equipment can be installed in typical water, sewage and industrial waste treatment plants.

Standard equipment such as screens, straight-line mixers, grit collectors and grit washers, and sludge collectors are described.

Special designs, where standard equipment has to meet particular operating conditions are also discussed.

("Water, Sewage and Industrial Waste Treatment Equipment," book 2617, is available from Link-Belt Company, Dept. Pr, Prudential Plaza, Chicago 1, Ill.)

For more information circle 5177 on Reader Service Slip.



Graph from bearing tester shows simultaneous test of two bearings under same loads. Friction force is measured by strain gages, bearing temperatures by thermocouples. Measurements were made and recorded every 6 seconds. T_A designates temperature rise of new bearing alloy; T_C temperature rise of other bearing being tested. F_A designates friction force of bearing alloy; F_C friction force of other bearing. Note lower temperature and coefficient of friction of molded plastic bearing

Bearing troubles?

If you are plagued by excessive bearing wear, oil contamination of product, if your equipment is slowing down because of rusting bearings, or deforming under operating temperatures—self lubricating, molded plastic oilless bearings having superior qualities may be your answer

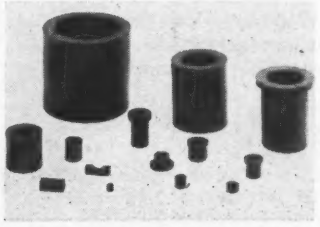
An unusual testing machine aided in the development of a better oilless bearing.

Tester measures and records friction force and temperature of bearing under various speeds and loads. Thus different properties could be built into bearing materials and their performance measured until a superior bearing was developed.

Material from which bearings are made is formulated as an alloy of plastics. Each ingredient has been selected to perform a particular function or to impart physical properties.

One of its ingredients acts as a reservoir for dry synthetic lubricant which is contained in alloy. When bearing warms up this ingredient meters lubricant to bearing surface. When rotation ceases and

(*Continued on next page*)



Bearings are compression molded to any size or shape

The big PLUS SERVICE EXPERIENCE RESEARCH PERFORMANCE in Oakite

Cleans, sanitizes, deodorizes in just one operation

COMBINING SEVERAL JOBS into one always brings time-saving and cost-cutting results. For instance:

Oakite Chlor-Tergent sanitizes and deodorizes as it *cleans*, completing three operations at one time. With detergent action, it penetrates, loosens, lifts soil free. With chlorine action, it kills bacteria and mold growth fast, stops odor by destroying the source. Surfaces are left thoroughly clean, film-free and sanitary. Cleaning equipment with Oakite Chlor-Tergent guarantees a complete job.

Where chemical sterilization alone is required Oakite Bactericide does the job best! Applied after cleaning, it provides maximum bacteria destruction almost instantly. Bactericide dissolves in hot or cold water—leaves no film on equipment.

The big PLUS in Oakite

Product development is only one of the plus factors you get by working with Oakite. Others include: the personal attention of the Oakite man . . . the vast experience of the Oakite organization . . . information on modern sanitation methods . . . time—and money-saving equipment . . . *guaranteed* performance. Ask your local Oakite man for proof. Or, write for Bulletin F-9414. Oakite Products, Inc., 27A Rector Street, New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE
SCIENCE

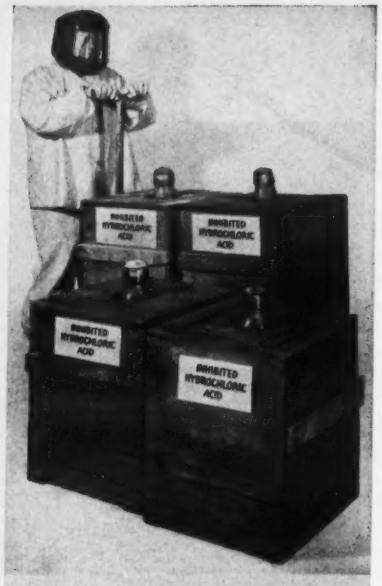
Export Division Cable Address: Oakite

in our 50th year

Technical Service Representatives in Principal Cities of U. S. and Canada

5178 on Reader Service Slip.

NEW dry-acid cleaners are concentrated, easier to handle, require less storage space. One 100-lb. drum, for example, occupies only 1.9 cubic ft. of storage space – is more than equivalent to a 192-lb. carboy of 18° Be' HCl.



OLD cleaning method required stocking bulky, returnable carboys of liquid acids. Special precautions are necessary in shipping and handling. And a 192-lb. carboy of 18° Be'hydrochloric acid occupies 5.6 cubic ft. of valuable storage space.

✓ Lower storage cost

Just one of the reasons why **Dry Acid Cleaners** based on **Du Pont Sulfamic Acid** are gaining wide favor for industrial equipment cleaning: ✓ Safer to handle ✓ Easy to use ✓ No hazardous fumes ✓ Powerful descaling action ✓ Less corrosive ✓ Lower handling and shipping costs.

CLEANERS BASED ON SULFAMIC ACID REMOVE SCALE AND DEPOSITS FROM:
Food-Processing Vessels, Pipelines, Gelatin Evaporators, Milk Evaporators and Pasteurizers.

DU PONT **Sulfamic Acid**

BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

Please send me:
- ☐ Free booklet about dry-acid cleaners based on Du Pont Sulfamic Acid
- ☐ Names of formulators who offer these cleaning compounds

E. I. du Pont de Nemours & Co. (Inc.)
Industrial and Biochemicals Dept., Rm. N-2543 FP
Wilmington 98, Delaware

Name_____

Firm_____ Title_____

Address_____

City_____ State_____

5179 on Reader Service Slip.

(*Continued from preceding page*)

bearing cools, lube is reabsorbed by uniformly dispersed reservoir.

Quantity of lubricant released is just sufficient to form oil film on contact surface. There is no excess and therefore no drip and no product contamination.

Another ingredient dissipates the heat generated at the bearing surface through the bearing wall to housing. As a result bearings operate at lower temperature.

Lubricant has special fluid-film properties. Oxidation inhibitor permits bearings to be operated at 375 F without degradation of this lubricant.

Wide ambient temperature range (−250 to +375 F), low thermal expansion and low water absorption are characteristics of bearings. They also have good resistance to corrosion and abrasion, and good wear properties in broad range of speeds and loads with PV valve in range of 30,000 plus.

Comparitive test of new alloy bearing against other bearings, see diagram, show improved performance in temperature rise and coefficient of friction.

Unlike most bearings that fail at high temperatures, sudden seizing does not occur. Under test conditions when bearings were purposely made to fail, they gradually disintegrated.

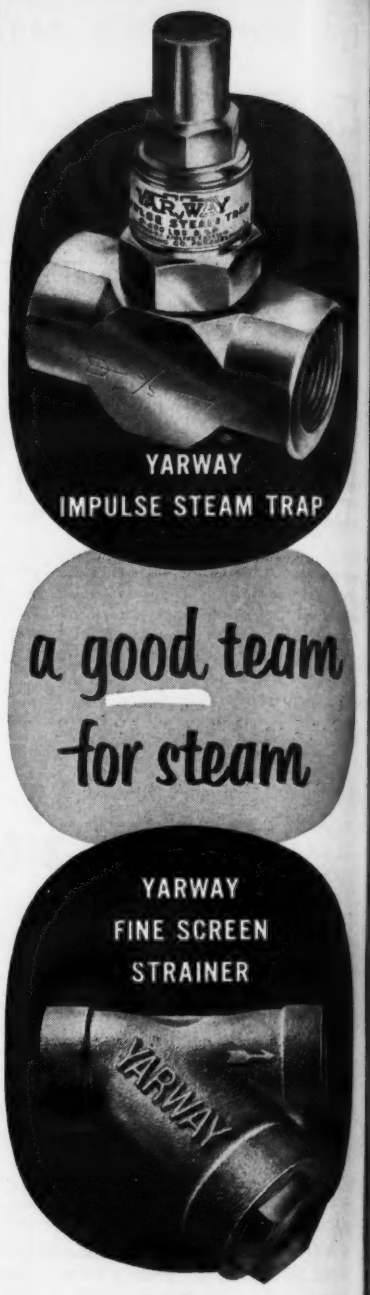
Bearings have been field tested for over two years in a wide variety of applications.

Their adaptability has been proven from pilot bearings in centrifuges, to conveyor-roll bearings, to pillow-blocks on head and foot pulley-shafts of a conveyor. In the former they operate at 15,000 rpm; in the latter very slowly, subjected to brine and low temperature.

Molded to any shape, bearings can be machined to close tolerances. They will not cold flow or melt.

(Oilless bearings made of Arguto-MP are produced by the Arguto Oilless Bearing Company, 149 Berkley St., Philadelphia 44, Pa.)

For more information circle 5180 on Reader Service Slip.



This Yarway team has scored high—over a million installed on all types of steam equipment. Stocked and sold by 270 Industrial Distributors. For free Steam Trap Book, write YARNALL-WARING CO., 100 Mermaid Ave., Philadelphia 18, Pa.

go YARWAY with confidence

5181 on Reader Service Slip.

Disposable paper clothing

Shirts, pants, laboratory or shop coats, aprons, hats and overshoes make up line of disposable clothing.

They are specifically designed for industrial, laboratory and commercial use in all parts of the food industry.

("Abanda" disposable paper clothing are manufactured by Disposables, Inc., 11 Mercer St., New York 13, N.Y.)

For more information circle 5182 on Reader Service Slip.

Dry fogs insecticide three times faster

Uses: For spraying large or small areas with insecticide where compressed air is unavailable. All that is needed is an electric outlet.

Features: Unit has spray head of five "aerosol" nozzles which dry fogs insecticide

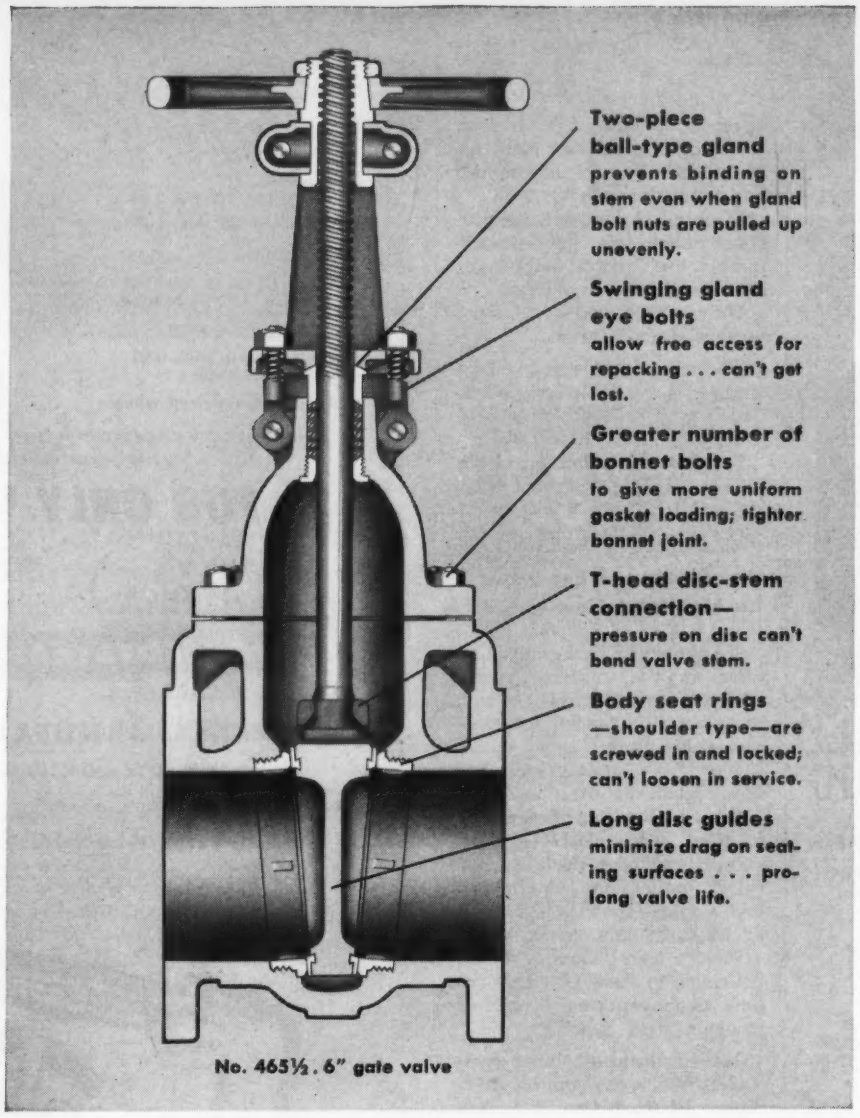
Five nozzles are feature of this mobile sprayer

three times faster than conventional two-nozzle sprayer. Newly designed nozzles produce a uniform dry fog of insecticide particles in the "aerosol" range of 12 to 15 microns average diameter.

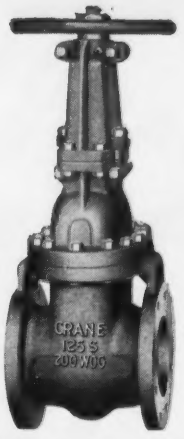
With potent insecticide, flying insects can be fogged in one minute and crawling insects in two minutes in 5000 cu ft space.

Description: Range of sprayer is 40,000 to 50,000 cu ft from one position. Capacity

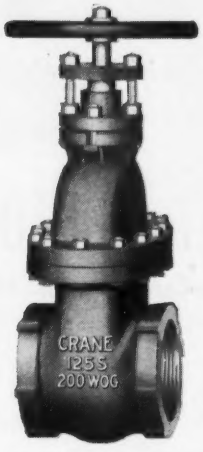
(*Continued on next page*)


Two-piece ball-type gland prevents binding on stem even when gland bolt nuts are pulled up unevenly.
Swinging gland eye bolts allow free access for repacking . . . can't get lost.
Greater number of bonnet bolts to give more uniform gasket loading; tighter bonnet joint.
T-head disc-stem connection— pressure on disc can't bend valve stem.
Body seat rings —shoulder type—are screwed in and locked; can't loosen in service.
Long disc guides minimize drag on seating surfaces . . . prolong valve life.

No. 465½. 6" gate valve



No. 465½. 125-Pound, OS&Y, bronze trimmed. Flanged ends. 2" to 48". Also in all-iron.



No. 460. 125-Pound, non-rising stem. Bronze trimmed; screwed ends. 2" to 8". Also in all-iron (to 4" only).

The valves most plants rely on— CRANE 125-POUND IRON BODY GATES

On general utility services . . . water mains and distribution lines . . . low-pressure steam and hot water . . . air and gas . . . more plants rely on Crane No. 465½ iron body bronze trimmed gates than on any other valve in this class. The cross section above reveals some of the advantages of Crane improved iron valve design . . . how they assure dependable operation through long life and provide for convenient servicing.

To enable you to standardize on these economical, efficient valves, Crane builds No. 465½ gates in sizes from 2 to 48 in. Popular sizes are available from local stocks of your Crane branch or Crane wholesaler.

See your Crane catalog for the widest selection of iron body valves: gates, globes, angles and checks. Your local Crane Representative will be glad to help choose the right valves for your service.

CRANE® VALVES & FITTINGS

PIPE • PLUMBING • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Illinois—Branches and Wholesalers Serving All Areas

5183 on Reader Service Slip.

SANITIZE SAFELY!

New Type Organic Chlorine Powder

KLENZADE

Tri-Chloro-Cide

Non-Corrosive for All Stainless Steel Processing Equipment

NO FILM
NO SEDIMENT

Sparkles in Hardest Water!

HIGH GERMICIDAL STRENGTH

Klenzade has greatly reduced the corrosion problem common to ordinary chlorine sanitizers with Tri-Chloro-Cide — a high powered stable chlorine powder that won't pit or corrode stainless steel. Tri-Chloro-Cide is an *organic* chlorine that produces a clear, sparkling solution of exceptional germicidal strength . . . even in hardest water! Tri-Chloro-Cide is perfect for fogging or rinsing. Leaves no film or sediment. Remarkably stable, quickly soluble, excellent shelf life.

MAKE EQUIPMENT SAFE WITH **Tri-Chloro-Cide** ORGANIC CHLORINE

KLENZADE PRODUCTS, INC.

Branch Offices Throughout America

BELOIT, WISCONSIN

5184 on Reader Service Slip.

sanitation

(*Continued from preceding page*)

is up to 380,000 cu ft without refilling. Operation can be controlled by an automatic, one-hour time clock.

Machine is compact, mobile, constructed of light-weight metals, has integral diaphragm motor-compressor system.

Unit is approved by Underwriters' Laboratories.

(Spacemaster insecticide sprayer is available from West Chemical Products, Inc., 42-16 West St., L.I.C. 1, N.Y.)

For more information circle 5185 on Reader Service Slip.

Non-lubricated bearings for high loads, low speed

Teflon TFE-fluorocarbon fiber is the material from which a new series of bearings have been developed to operate without lubricant.

They are priced close to their metal counterpart.

Fiber's low coefficient of friction, from 0.01 to 0.04, makes bearings especially useful in applications which have low surface speeds, high unit or high dynamic loads.

Field tests have shown bearings to last 10 times as long as conventional bronze or steel-on-steel bearings.

(Sleeved bushings lined with Teflon fiber are made by Redmond Plastics Co., PO Box 117, Palmyra, N.Y.)

For more information circle 5186 on Reader Service Slip.

(Sleeved bushings lined with Teflon fiber are also made by W. S. Shamban Co., PO Box 1037, Culver City, Cal.)

For more information circle 5187 on Reader Service Slip.

(Radial bearings made of Teflon are manufactured by Radial Bearing Corporation, Taylor St., Danbury, Conn.)

For more information circle 5188 on Reader Service Slip.

(Further information on Teflon TFE-fluorocarbon fiber may be obtained from the Technical Service Section, Textile Fibers Department, Du Pont Company, Wilmington, Del.)

For more information circle 5189 on Reader Service Slip.

Imagine—

ALL THIS:

- Fully automatic ignition
- 50 to 150 p.s.i. gun nozzle pressure with modulated fuel control
- 100 g.p.h. capacity
- Built-in soap tank and anti-siphon valve
- Large rubber-tired wheels

—all these and other features found only in higher-priced, bigger units

FOR ONLY $495.00 F.O.B. FACTORY

Pantex SPEEDYSTEAM "100"

It's today's biggest buy in a budget-priced quality-built STEAM-JET CLEANER

Write for Bulletin—SC-500

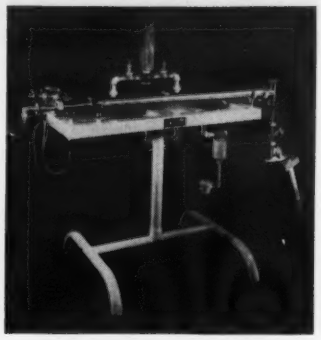
PANTEX MANUFACTURING CORP.

P.O. BOX 660 K, PAWTUCKET 10, R. I.

5190 on Reader Service Slip.

need more information . . .

Note there is a key number at the end of editorial articles or advertisements. To request more information circle the proper number on the convenient form opposite the last page. Send the form to us . . . we do the rest. Information comes direct to you. No obligation, of course.



Steam injection heaters are mounted on frame which is also steam header. In addition, frame supports all accessory equipment. Unit is 36 in. high by 18 in. wide

Injection heating to 310 F

Compact sanitary unit, featuring "cool" steam nozzle solves problem of discoloration, burn-on

DIRECT steam injection heating is often accompanied by product impairment due to localized burning and mechanical damage. This is especially true with higher processing temperatures that are coming into use today.

Injection nozzle with a cooling jacket for circulating compressed air is a solution to this problem. Coolant keeps metal in product-contact area from heating above acceptable temperature, thus makes UHT processing practical.

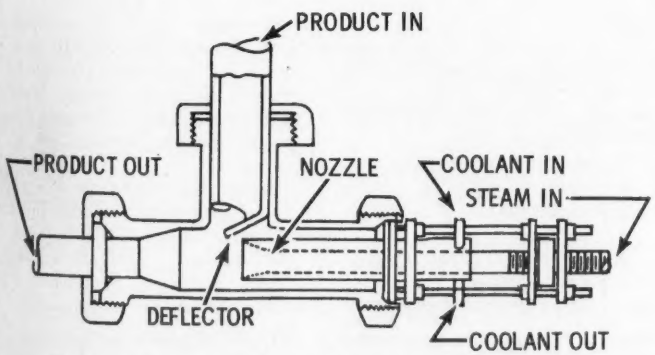
"Mechanical" damage which results from impact of steam on product is reduced by lowering the velocity of steam. This is accomplished by mounting two nozzles in series.

Direct steam injection heaters are useful for preheating, prior to evaporation or drying, such sensitive fluids as milk, fruit or vegetable juices or purees.

Adjustable in operation

Position of steam inlet nozzle is determined by product being run and capacity needed. Adjustment can be made without shutting down.

(*Continued on next page*)



Uniform mixing of steam with product is aided by deflector which directs the incoming product ahead of the nozzle outlet. Outer surface of injection nozzle, i.e., the surface in contact with liquid being heated, is cooled by compressed air circulating in jacket (represented by dashed lines in cutaway view)

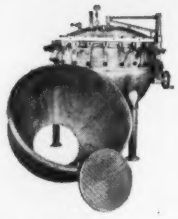
SA—streamlined balloon jacket design. Extra large diameter provides greater heating surface. Sizes 15 to 500 gallons. Constructed for steam working pressures of 40, 90 and 125 pounds.

SA MIX COOKER—has single or double motion agitator with or without hydraulic lift. Agitator lifts easily and smoothly out of cooker. Sizes 30 to 500 gallons.

CW—designed to process batches up to 150 gallons. Positive worm gear. Handwheel gives control of capacity loads while tilting. Large diameter kettle gives fast even cooking.

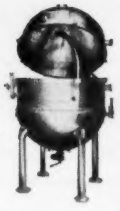
BUILT-IN QUALITY

. . . IN HAMILTON SPECIAL OR STANDARD KETTLES ASSURES LOWER PROCESSING COSTS



PC—stainless steel pressure cooking kettle for meat and poultry processing. 90 p.s.i. in jacket and 15 p.s.i. in kettle. Quick opening latches. Top is lifted by eccentric lever. Sizes 30 to 250 gallons.

HV—vacuum cooker from 150 to 500 gallons. Hinged manhole provides access to the inside. Available with a mixer—circulator can be installed to increase heat transfer and agitation.



VT—vacuum cooker has no equal for small batches. Tilting top easy loading. Sizes 30 to 150 gallons. Jacketed for 90 p.s.i. steam working pressure.

SPECIAL—PC Style Pressure type mix-cooker. Jacket to full 200 gal. level. Plate type heating-cooking coils arranged to act as agitator baffle plates. Entire unit removable for easy cleaning.

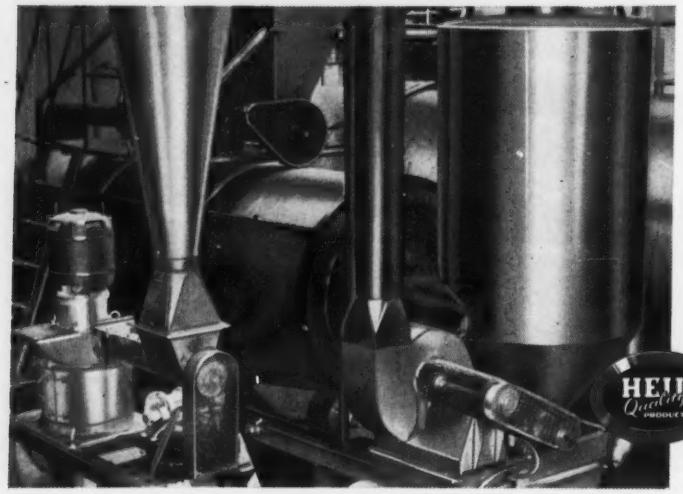
Hamilton offers the right kettle for any mixing or cooking job. The Cost? Reasonable and economical in the light of finished and polished fabrication. Sanitation guaranteed. Careful competent workmanship and constant inspection assures you of quality that is built-in. We'll work from your prints or create them for you on our drawing boards. Write for free Hamilton Kettle Catalogue.

ESTABLISHED 1876
HAMILTON Kettles
COPPER AND BRASS WORKS
DIVISION OF BRIGHTON CORP.
820 STATE AVENUE, CINCINNATI 4, OHIO

5191 on Reader Service Slip.

HEIL DRYERS

convert waste disposal problem into profit-making by-product



San Jose Canning Co., San Jose, Calif., uses a Heil dryer to reduce moisture content of tomato pomace from 50 to 7 percent. With additional processing it is sacked and sold to animal feed packers. Production is around 6½ tons in a 20-hour shift. Result: hauling costs are down two-thirds and San Jose earns an income from material that once cost money just to be thrown away.

A Heil dryer dries materials on a stream of hot air, with each particle correctly exposed in proportion to its moisture content. Result is quick, uniform drying. The Heil unit is compact, too, with three drying cylinders within a single drum. Write for all the facts on Heil dryers . . . capacities range from models to evaporate 500 lb up to 36,000 lb of water per hour.

THE HEIL CO.

Manufacturers of the Arnold Dryer

Milwaukee, Wisconsin

Photo courtesy of Canner/Packer Magazine

5192 on Reader Service Slip.

Measure soluble sugar content, percent alcohol or dissolved solids *instantly* with

THE NATIONAL HAND REFRACTOMETER

Test juices, beverages, syrups, jellies, tomato products, etc. Check maturity of crops right in the field. Measure alcohol content of extracts, solutions, etc.

EASY TO USE Place two or three drops of liquid on test plate, close cover and read percent sugar, dissolved solids, or alcohol content instantly. No calculations—no waiting. Three models cover the range from 0 to 90%. Accuracy to 0.2%.

New Low Price

$54.00

complete with sewn leather case and shoulder strap.

Write for Bulletin CQ1

NATIONAL INSTRUMENT CO.

2701 Rockwood Ave. • Baltimore 15, Md.

5193 on Reader Service Slip.

ELECTRONICS-TIME *Lumenite* AUTOMATIC CONTROLS

- *ELECTRONIC LIQUID LEVEL*
- *INDUSTRIAL TIMERS*
- *TIME SWITCHES*
- *MAGNETIC SWITCHES*
- *ELECTRONIC SWITCHES*

Your business is of first importance, therefore, all LUMENITE manufacturing and engineering are devoted to the sole production of Controls. In the following list of Bulletins there is a Control best suited to your operation in a money making and saving way.

For complete information and prices check ☑ the Bulletins you want. We'll send them without obligation. Tear out the ad and use it for your requests.

The Bulletins are technically informative; with load capacities, installation diagrams, etc.

- ☐ TIME SWITCHES
- ☐ PROGRAM CLOCKS
- ☐ CYCLE REPEATERS
- ☐ TIME DELAY RELAY
- ☐ AUTO-LAWN SPRINKLERS
- ☐ LIQUID LEVEL
- ☐ MILK LEVEL
- ☐ NONCONDUCTIVE LIQUID
- ☐ AUTOMATIC RESET
- ☐ ICE THICKNESS
- ☐ BOILER LEVEL
- ☐ MOTORIZED SANITARY VALVES
- ☐ INTERVAL TIMERS
- ☐ PHOTO-ELECTRONIC RELAYS-COUNTERS, ETC.

All LUMENITE products have a responsible guarantee

LUMENITE ELECTRONIC CO.

ENGINEERS • DESIGNERS • MANUFACTURERS

407 South Dearborn Street Chicago 5, Illinois

5194 on Reader Service Slip.

(*Continued from preceding page*)

Flared steam nozzle is adjustable axially by rotation of nut.

Product inlet tube has deflector which is at 45° angle to line of flow of material (see illustration). Tube can be raised or lowered, thus adjusting deflector vertically.

Constant back pressure is maintained by weight-loaded back pressure valve. Valve is capable of shifting fast enough to compensate for variation in flow. It is easily disassembled for cleaning.

A steam controller, placed in steam-inlet line (see photo upper right) regulates flow of steam to heaters. It is controlled by thermostatic bulb placed between back pressure valve and heaters and regulates steam according to temperature desired.

Steam supply

To assure high-quality steam at heaters, they are provided with mechanical steam separator and steam trap. Since steam is added to food, a pure supply is required.

Manufacturer makes these recommendations:

Boiler should have steam separator in steam drum or below steam-header outlet. Boiler water level, if not automatically controlled, must be watched with care and maintained at medium level.

Boiler compounds, if used, should be added in small amounts over a period of time. Toxic or pungent chemicals should not be used.

Headers should be provided with trapped drains. It may even be necessary to place orifices in major steam lines to prevent sudden demand for steam "pulling" water out of boiler.

Some plants use conductivity cells in steam-header lines as watch dogs. Cells indicate and record conductivity of steam which increases if steam becomes contaminated.

(Direct Steam Injection Heater is manufactured by C. E. Rogers Company, 8731 Witt St., Detroit 9, Mich.)

For more information circle 5195 on Reader Service Slip.

Wood tanks for the food industry

Brochure illustrates and describes various types of wooden tanks, their uses and characteristics.

Applications include such liquids as vinegar, pickles, grape juice, cider and wine.

A second brochure lists and describes tools and hardware necessary for maintenance of wooden tanks.

("Arrow Tanks for the Food Industry," and "Arrow Hardware for Wood Tanks," each 4pp, is available from the Arrow Tank Company, Inc., 16 Barnett St., Buffalo 15, N.Y.)

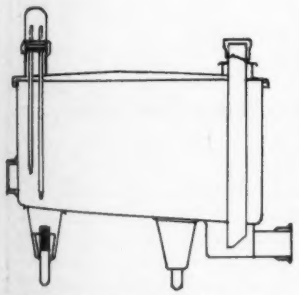
For more information circle 5196 on Reader Service Slip.

Surge tank for efficient product changes

Tank drains to less than a quart without admitting air to system

Due to design of bottom and outlet, new surge tank (see diagram) can be drained to less than one quart; can be emptied before air is drawn into HTST system.

As a result, different products may be run through system without significant mixing.



Diverted-product-return line enters tank at top front and passes through tank into discharge outlet

Diverted-product return is so designed that diverted material does not remix in balance tank but is immediately returned to plate-heat-exchanger line. Further, back

(*Continued on next page*)

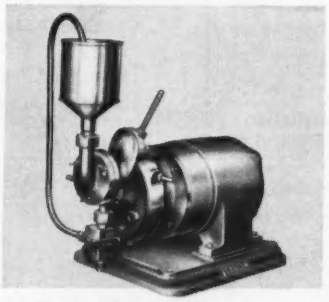
Now Rent a Laboratory Homogenizer

For Only $75.00 per Month

...and see for yourself how Gaulin Particle Control improves product quality and reduces costs

Now, for a few dollars per day, you can have a laboratory homogenizer in your plant to explore the advantages of Gaulin Particle control on your product . . . to produce superior dispersions, emulsions or blend. No special skills are required to operate the machine. It is quickly and easily disassembled for inspection and cleaning.

Maximum capacity is 15 gph; minimum processable sample — 1 pint; pressures to 8000 psi continuous, 10,000 psi intermittent.



Gaulin RE* Two-Stage colloid Mill — Model 2A — is available for processing quantities as small as 8 ounces, and is invaluable for research, laboratory or pilot plant applications. Also available on rental basis.

Remember, the rental cost is applicable against the price of the machine.

Write for more information and bulletins on the Gaulin Laboratory Homogenizer LH-55, Sub-Micron Disperser SMD-55, Homogenizers H-55.

Gaulin TRADE MARK MANTON Gaulin MANUFACTURING CO., INC. EVERETT, MASS.

59 Garden Street, Everett 49, Mass.

World's largest manufacturer of stainless steel reciprocating, rotary, pressure exchange pumps, dispersers, homogenizers and colloid mills.

Ask GTA...

Gaulin Technical Assistance — for data on the complete Gaulin line: Homogenizers, Colloid Mills, Submicron Disperser, Triplex High Pressure Pumps and HX Pumps. Get GTA from your nearest Manton-Gaulin Representative . . .

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5197 on Reader Service Slip.

The New CogMill

Now being used by leading food processors for—

SHREDDING and BLENDING cheese.

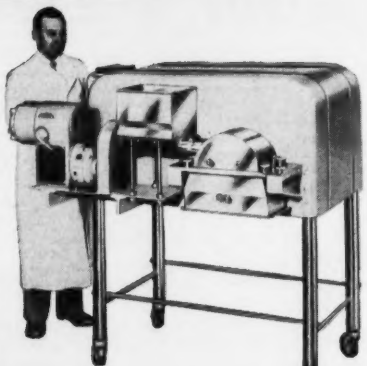
GRINDING spices, dates, soup stocks, dehydrated beef, chicken bones, and grinding Vienna bread into chunks, and, after drying, to crumbs.

SPRAY BLENDING coffee oil into powdered coffee.

BREAKING horseradish roots and grinding while blending with vinegar.

CHOPPING
GRANULATING
PULVERIZING
DISPERSING
—wet and dry solids, liquids, pastes, emulsions and slurries, and combinations of these to desired consistency.

Permits uniformity of product and close control of color and taste.



Process without Contamination

Exclusive snap-apart design permits quick thorough cleaning of every product contact area, all of which are stainless steel. All operations are performed under dustless and liquid-tight conditions. Complete separation of bearings from the working chamber prevents oil or grease mixing with the product.

Models for manual or continuous feeding by 7½ to 20 H.P. motors. Jacketed inlet and outlet for—

TEMPERATURE CONTROL

Send for details, designating product to be processed and rate of production desired.

THE COG CORPORATION

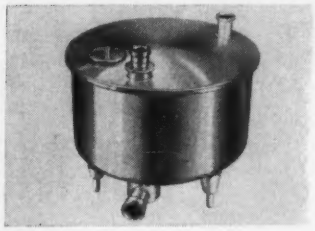
Division of Motiograph, Inc. · Established 1896
4389 W. LAKE STREET · CHICAGO 24, ILLINOIS
A. TORRES EXPORT, INC. · 2550 W. Peterson Avenue · Chicago 45, Ill., U.S.A.

5198 on Reader Service Slip.

(*Continued from preceding page*)

siphoning is eliminated.

Incoming raw milk is controlled by electronic liquid-levl probes when positive displacement pump is used.



Holding capacity of tank is 20 gal. It is completely made of SS according to latest 3A standards

With centrifugal pump, incoming flow is controlled by positive shut-off valve connected to float assembly.

Flow through shut-off valve is smooth—there is no squirting or spraying, churning and foaming.

Valve will hold against pressures up to 35 psig, yet has low pressure drop. Feed pressure of only 9.2 ft (about 4 psi) is sufficient for volume of 30,000 lb/hr. Therefore gravity feed from storage tanks is feasible.

(Balance tank is a product of The De Laval Separator Company, Poughkeepsie, N.Y.)

For more information circle 5199 on Reader Service Slip.

Mechanically twists 42 loaves/min

Machine for automatic bread production moulds and pans single loaves at 60 pieces per minute. It also duplicates hand twisting at rate of 42 loaves per minute.

Four-page brochure illustrates and describes this machine. Technical specifications as well as performance data are included.

(Brochure on "Moulder, Twister, Panner" is available from the Food Machinery Division of Baker Perkins Inc., Saginaw, Mich.)

For more information circle 5200 on Reader Service Slip.

Would you like to receive FOOD PROCESSING personally?

It will be sent to you without charge or obligation . . .

. . . if you qualify
. . . if you request it

If you are responsible for processing operations in an administrative capacity as plant superintendent, food technologist, chemist, engineer or equivalent responsibility . . . in a plant of substantial operations* where food processing is an important factor . . . FOOD PROCESSING will be sent to you without charge or obligation if you request it. Use form below. In requesting, be sure to answer all questions. If your firm is not rated or listed in standard references, indicate size of the company by capacity, annual sales or number of employees. Unless all information is given, magazine will not be sent.

*"Substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

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Please send me FOOD PROCESSING without charge or obligation

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Main Products _____

Storage tank on liquid cooler holds reserve chilled liquid

Packaged liquid coolers with storage tank, designed primarily for laboratory or pilot plant use, where a supply of chilled brine or water is required, are described in 2-page bulletin.

Units are also applicable for industrial applications where a reserve of chilled brine is desired for instant use.

Bulletin provides complete specifications and optional equipment, as well as showing photo of unit.

(Bulletin on "Packaged Liquid Coolers With Storage Tank" may be obtained from Doyle & Roth Manufacturing Company, Inc., 136-50 Twenty-Fourth St., Brooklyn 32, New York.)

For more information circle 5201 on Reader Service Slip.

Buyers guide for fluid processes

Literature explains program of new approach to handling and processing liquids and gases by industry.

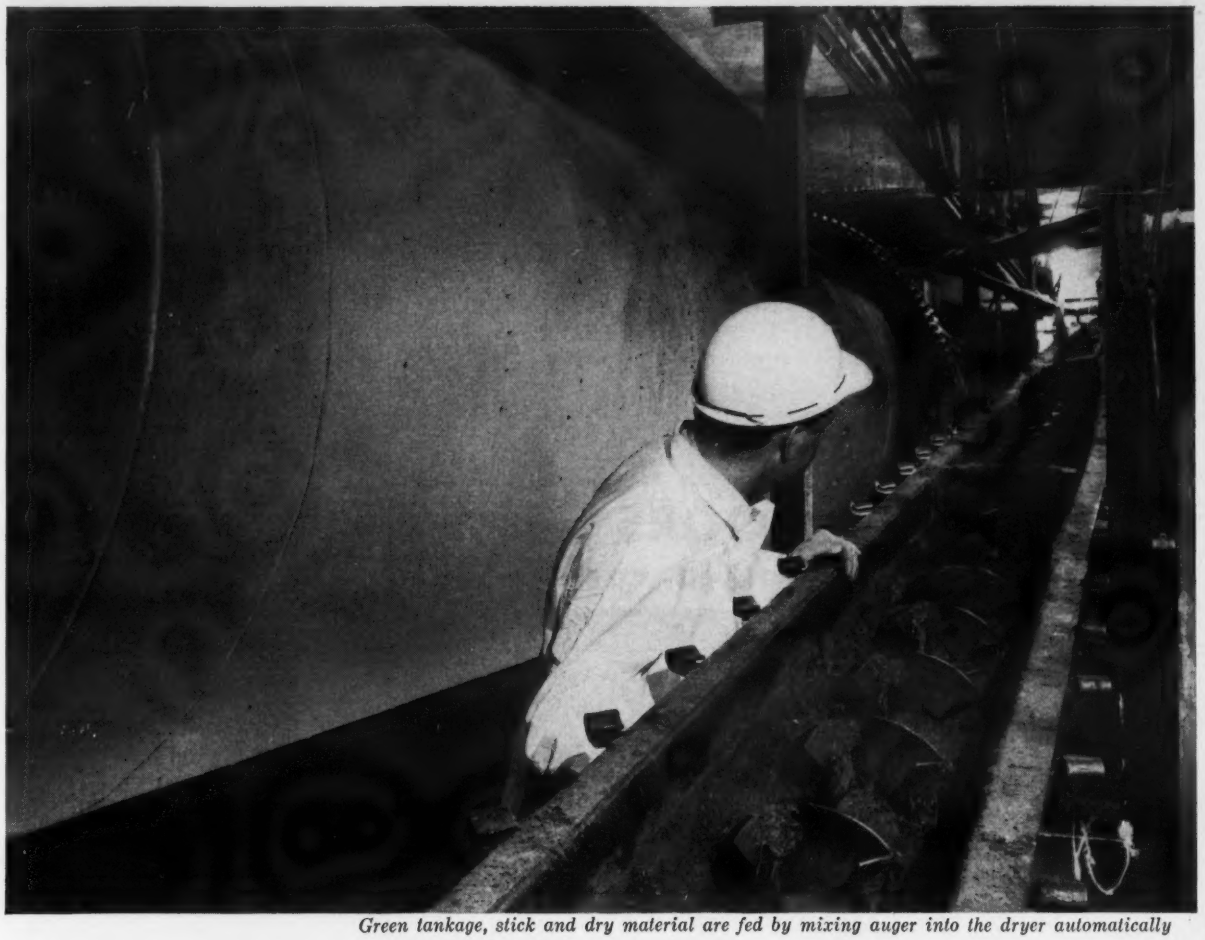
Each section of 16-page bulletin is illustrated with application photos. Engineering data outlines planning, engineering and manufacturing of equipment for specific unit operations or integrated continuous operations.

Applications include reactions, storage, water treatment and waste treatment. Design, development and project engineering are presented.

Some of the specific areas covered in detail are corrosion engineering, ion exchange, distillation and evaporation, drying and blending, centrifuging, heat transfer and gas analysis.

("Fluidics Buyers Guide," Bulletin 980, may be obtained from the Pfaudler Division of Pfaudler Permutit Inc., 1094 W. Ave., Rochester, N.Y.)

For more information circle 5202 on Reader Service Slip.



Green tankage, stick and dry material are fed by mixing auger into the dryer automatically

One Louisville Dryer Replaces 3 Batch Cookers

in processing green tankage at Rath Packing Company

Rath Packing Company at Waterloo, Ia. was among the first to ship by refrigerator car to the West Coast and to package sliced bacon. Now, Rath is pioneering a new operation in processing valuable waste products. A Louisville Dryer, 6 feet in diameter and 45 feet long, gives Rath a continuous operation for green tankage—used to make high protein food for animals and fowl.

"Production records since installation of this dryer in 1954 indicate that it can process as much material as three of our large batch cookers, on one-fourth the electric current, less attention and no down-time at all," says C. Winston Wheeler, foreman of the Tankage Department at Rath.

"With the Louisville Dryer we have better control of odors coupled with reduced costs. The Louisville Dryer gives us *continuous operation* that approaches *automation*, where conventional cookers require loading and unloading. We have turned out as much as 135,000 pounds of material in 24 hours."

The Process Equipment Division of General American, with long experience in a wide variety of fields, will recommend and manufacture a Louisville Dryer exactly suited to your needs. Let us show you why *it pays to plan with General American.*

Write for Bulletins:
Steam Tube Dryers #58L
General Dryers & Equipment #59L

Process Equipment Division
GENERAL AMERICAN TRANSPORTATION
135 South LaSalle Street • Chicago 3, Illinois
Offices in principal cities

Louisville Dryers
CORPORATION

5203 on Reader Service Slip.

Resists corrosive effects of blood, water soaking, animal fats and brine. Monile applied in the beef kill room, smokehouse alley, sausage kitchen and lard room.—Peet Packing Co.

How MONILE FLOORS increase sanitation...cut costs

MONILE—one-piece monolithic surfacing—stops leakage of processing residue... Prevents harboring of bacteria in open joints...Resists water and grease soaking ...Withstands destructive effects of food acids, alkalies, salts, sugar, brine and strong cleansers...Stands up under heavy steel-wheel trucking, loading and impact. MONILE floors save repair, replacement or resurfacing. Bonds strongly. Applied to existing surfaces—concrete, tile, wood. Saves down-time and processing stoppage. MONILE is a product of The Master Mechanics Co.—specialists in solving problems of sanitation and maintenance for nearly a half-century. Send for illustrated brochure. *The Master Mechanics Co., 2097 Columbus Rd., Cleveland 13, Ohio. The Master Mechanics Chemicals Co., (Canada) Ltd., Toronto, Ontario.*

Serving the Food Industry since 1913

MASTER MECHANICS

Lactic acid resistant Monile checked erosion, spalling and cracking of floors at Orrville Milk Condensing Company.

Leakage of processing residue from the eviscerating room to packaging area below was stopped with Monile at American Poultry Company.

Heavy trucking of raw materials on sharp skids is resisted by Monile. Flour easily cleaned from Monile with dry mop—Wonder Bread Bakery.

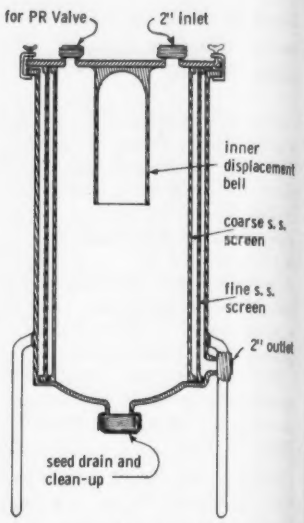
5204 on Reader Service Slip.

processing

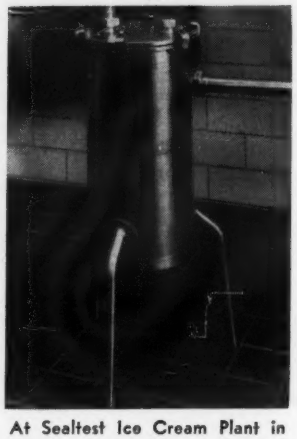
Up to 15,000 lb/hr with sanitary

combination filter-strainer

Made for straining seed particles, fruit or foreign matter from ice-cream mix, strainer will also filter milk and other food products when filter-cloth is inserted between two perforated SS screens.



Because seed drain is located at bottom center, solids can be drained without loss of product at end of each run. Filter-strainer shown is 42 in. high by 14 in. diam. 2 in. outlet is 16 in. above floor level



At Sealtest Ice Cream Plant in Omaha, strainer-filter is located just beyond blending tank in UHT ice-cream mix system

Filter-strainer will handle up to 15,000 lb/hr at 60 F. It is built to withstand internal product pressures in excess of 50 psi.

Pressure drop through tank is 5 psi. Inner displacement bell evens out flow by dampening pump pulsations.

Top of tank requires no gasket since there is an O-ring in cover (see drawing above). Cover also has 1½ in. diam opening for pressure-relief valve set at 55 psi.

Inlet and outlet are both 2 in. diam. Inlet is located on top in cover; outlet at bottom on side. Drain for clean-up and foreign-particle removal is located at bottom, center.

Sanitary tank is of all stainless construction. Screens are made of type 18-8, balance of type 304.

(Ice Cream Mix Filter-Strainer is made by Chicago Stainless Equipment Corporation, 5001 N. Elston Ave., Chicago 30, Illinois.)

For more information circle 5205 on Reader Service Slip.

Separation of ferrous materials at speeds up to 600 fpm

An 8-page bulletin describes electromagnetic pulleys and explains their application in modern process industries.

The booklet outlines principles of operation and tabulates the approximate weights per cubic foot of 146 materials which are handled by belt conveyors.

Tables and formulas for selecting the right pulley size for normal separation, faster belt speeds or inclined conveyors are included in the brochure.

("Stearns Electromagnetic Pulleys," Bulletin 1011, is available from Stearns Magnetic Products, 635 S. 28th St., Milwaukee 46, Wis.)

For more information circle 5206 on Reader Service Slip.

Association News

Air-Conditioning and Refrigeration Institute

will present a special "conference session" at this year's 11th Exposition of the Air-Conditioning and Refrigeration Industry. Authorities will speak on new developments and trends in such fields as commercial refrigeration and commercial and industrial air-conditioning. Included will be reports on studies made showing how efficiency of personnel as well as many types of machines and devices is enhanced by controlled temperature and humidity.

Poultry and Egg National Board

8 S. Michigan Ave., Chicago 3, Ill., will continue to receive nominations for its 1959 Research Achievement Award until November 15. Any resident of the US or Canada is eligible, and membership in any professional organization is not a prerequisite. Nominations should be sent to Dr. Milton L. Scott, Professor of Nutrition, Poultry Science Division, Cornell University, Ithaca, N.Y.

National Confectioners Association

announces appointment of Frank D. Register as executive assistant to the president and director of NCA field and promotion activities. He succeeds H. MacGregor Tuttle who is now executive director of the Waxed Paper Institute.

Sugar Research Foundation, Inc.

New York City, will spend more than $250,000 on research in the US and abroad during the current fiscal year. Approximately one-third of the budget will be spent on food technology, considerably more than in the past.

For more information on product at right, circle 5207 see information request blank opposite last page.

CES'59

Now – Pure, Pyrogen-free Sterile Water DIRECT FROM BOILER STEAM

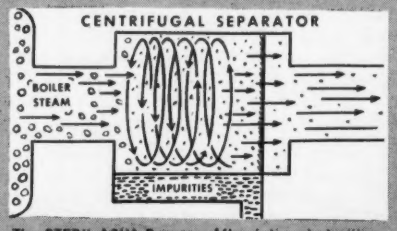
STERIL-AQUA® is not to be confused with ordinary water stills. The Castle STERIL-AQUA® System uses a completely new concept to produce high purity water.

No conventional still has these advantages.

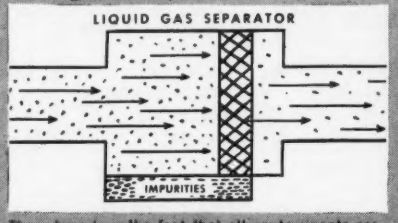
1. **Straight-Thru Process**—uses direct *raw boiler steam*. Eliminates secondary heating.
2. **Capacities**—5-500 gallons per hour. Operates at and produces continually its rated capacity.
3. **Maintenance**—direct process eliminates complex components. All components housed in single frame.
4. **Product**—meets all USP standards for pure, pyrogen-free sterile water.
5. **Space Saving**—STERIL-AQUA averages ⅕ size of comparable capacity conventional units.

RESULT: LOW COST! Pure, pyrogen-free, sterile water at a fraction of standard still costs.

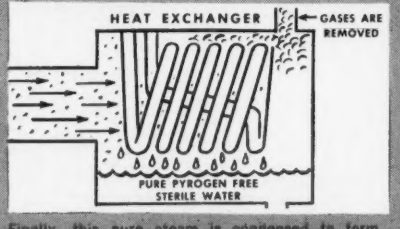
STRAIGHT-THRU PROCESS



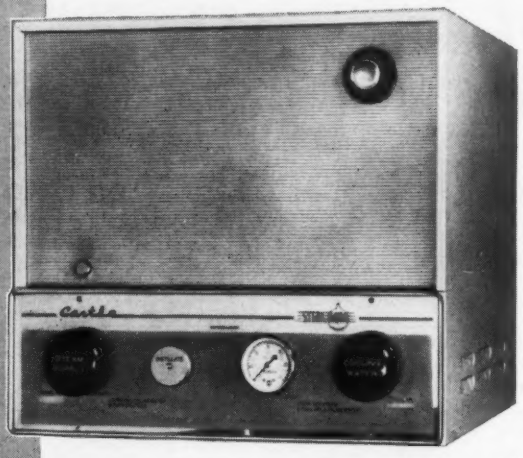
The STERIL-AQUA Process. After internal sterilization, unit receives raw boiler steam, already sterile because of high temperature. Gross impurities are removed with a steam strainer and centrifugal steam separator.



Then, based on the fact that all contaminants are located in particles of moisture, STERIL-AQUA employs a unique liquid gas separator which has been rendered hydrophobic (water repellent) to allow only pure vapor to pass.



Finally, this pure steam is condensed to form pure, pyrogen free, sterile water of exceptional quality. This water can now be pumped directly from the still to the sterile area. No intermediate handling is required.



THE CASTLE STERIL-AQUA®

DIRECT FROM BOILER STEAM
The new STERIL-AQUA system with a capacity range from 5 to 500 gallons per hour, is available for every need, from the smallest laboratory to the production line. Smaller units—5 (as shown), 12, and 25—are manually operated. Other units with manual, electric (remote), or full automatic controls. All STERIL-AQUA equipment is designed so the complete interior can be sterilized.

SEND FOR THIS FREE BROCHURE
An 8 page analysis of *direct from steam* STERIL-AQUA, with special emphasis on the economic advantages of the STERIL-AQUA System.

OTHER NEW CES DEVELOPMENTS Castle Pfaudler DRYER BLENDER STERILIZER: First completely automatic unit for drying, blending and sterilizing bulk products. Send for free brochure.

Castle STEROX-O-MATIC: First completely automatic gas sterilizing system developed for industry. Send for free brochure.

***CES MEANS CASTLE ENGINEERED STERILIZATION**

A CONTINUING development and research program to create more efficient and economic sterilization. Castle engineers are prepared to offer practical solutions to any and all of your sterilizing problems.

Visit Booth 1033 AT THE CHEMICAL SHOW

Castle

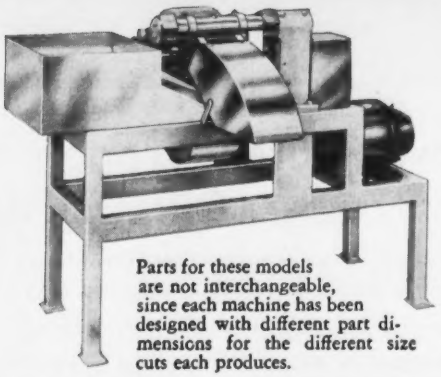
FIRST IN INDUSTRIAL STERILIZATION

WILMOT CASTLE COMPANY • BOX 629 • DEPT. 2000-B ROCHESTER 2, N. Y.

URSCHEL

Models F, G, H *and* GK ... *are* 4 *Separate Cutting Units!*

They all look alike...all operate alike



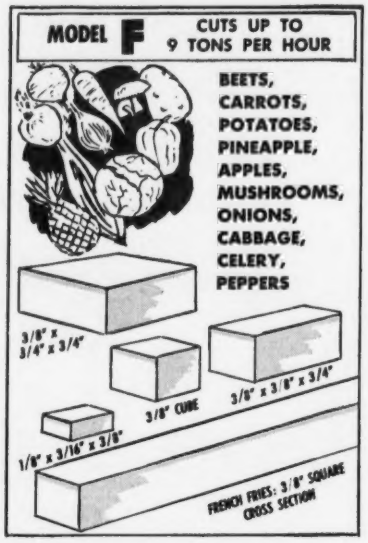
Parts for these models are not interchangeable, since each machine has been designed with different part dimensions for the different size cuts each produces.

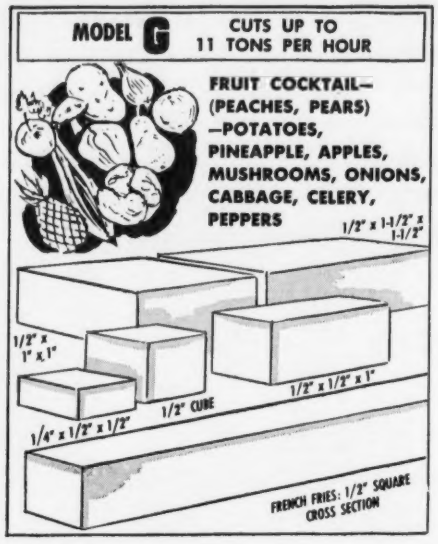
...but each produces a different range of cut sizes!

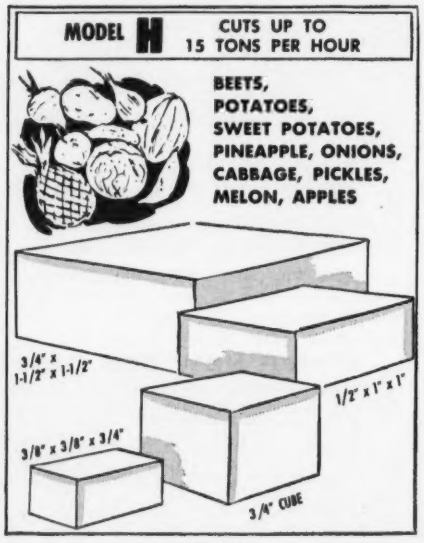
The product to be diced is fed first to the inside of a slicing shell, where it is then rotated by an impeller at high speed. Centrifugal force causes product to slide around the inside surface of slicing shell. As product approaches top of this shell it slides over an adjustable slicing gate which controls slice thickness. Slicing knife is at top of slicing shell. At the instant of slice, cross cut knives ride down, cutting slice crosswise into strips, or french fry cuts. These knives throw the product into the revolving circular knives that cut the strips into cubes.

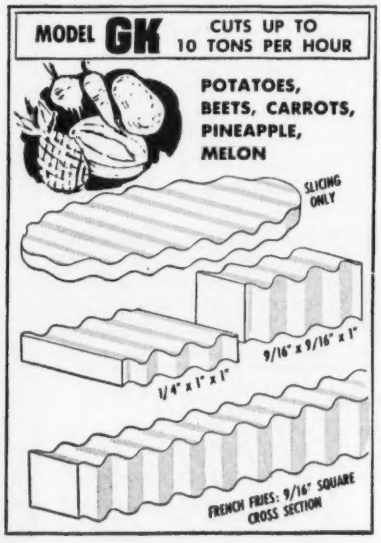
This new cutting principle has many advantages over previous methods. When slicing any product with a knife, the product tends to crack parallel with the knife's edge, particularly in brittle, root vegetables. Product cracking is overcome by cutting parallel with the strains set up, thus eliminating strains and the resultant cracking.

Product damage is eliminated by moving the product in a straight line from the time the first cut is made until the last cut is made, which reduces impact and crushing, and makes possible the high operating speed and quality of cut produced.


MODEL F
CUTS UP TO 9 TONS PER HOUR
BEETS, CARROTS, POTATOES, PINEAPPLE, APPLES, MUSHROOMS, ONIONS, CABBAGE, CELERY, PEPPERS
3/8" x 3/4" x 3/4"
3/8" CUBE
3/8" x 3/8" x 3/4"
1/8" x 3/16" x 3/8"
FRENCH FRIES: 3/8" SQUARE CROSS SECTION


MODEL G
CUTS UP TO 11 TONS PER HOUR
FRUIT COCKTAIL—(PEACHES, PEARS) —POTATOES, PINEAPPLE, APPLES, MUSHROOMS, ONIONS, CABBAGE, CELERY, PEPPERS
1/2" x 1-1/2" x 1-1/2"
1/2" x 1" x 1"
1/2" CUBE
1/2" x 1/2" x 1"
1/4" x 1/2" x 1/2"
FRENCH FRIES: 1/2" SQUARE CROSS SECTION


MODEL H
CUTS UP TO 15 TONS PER HOUR
BEETS, POTATOES, SWEET POTATOES, PINEAPPLE, ONIONS, CABBAGE, PICKLES, MELON, APPLES
3/4" x 1-1/2" x 1-1/2"
1/2" x 1" x 1"
3/8" x 3/8" x 3/4"
3/4" CUBE


MODEL GK
CUTS UP TO 10 TONS PER HOUR
POTATOES, BEETS, CARROTS, PINEAPPLE, MELON
SLICING ONLY
9/16" x 9/16" x 1"
1/4" x 1" x 1"
FRENCH FRIES: 9/16" SQUARE CROSS SECTION

PRECISION HIGH-SPEED FOOD CUTTING EQUIPMENT

URSCHEL LABORATORIES INC.
VALPARAISO, INDIANA

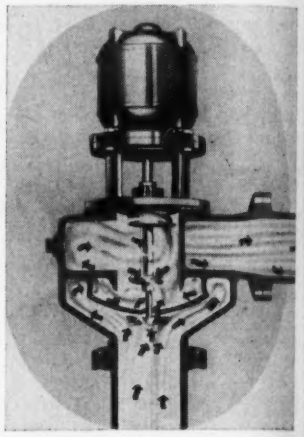
Designers and manufacturers of precision, high speed cutting equipment for food products

5208 on Reader Service Slip.

Continuous, in-line mixer for pilot plant operations

Continuous, in-line mixer for pilot plant operations will perform identical functions as larger units.

It provides fast, uninterrupted service in mixing, blending, reacting, washing, contacting, bleaching, absorbing, chlorinating, clarifying and other operations.



Arrows in above photo show product flow through continuous, in-line mixer for pilot plant applications

Mixer eliminates need for intermediate storage tanks and mixing vessels, simplifying pilot layouts. Combined liquids, solids and liquids, or gases and liquids readily flow through piping.

Unit is available in ½" laboratory size as well as a 1" size.

(Continuous, in-line mixer for pilot plant applications is a development of Nettco Corporation, 81 Tileston St., Everett 49, Mass.)

For more information circle 5209 on Reader Service Slip.

For more information

on processing developments, see New Industrial listings, p. 131.

Economically holds minus 8 F over wide load range

System of 2 rotary and 2 reciprocating compressors automatically steps down capacity from full-load—4 machines on, to no-load —4 machines off, through capacity reduction and partial shut-off

FLUCTUATING freezer temperatures, caused by variations in product-load, ambient outside temperatures, or heavy warehouse traffic, are held to ±1 degree automatically at Central Warehouse Corp.'s new Fullen Road warehouse in Albany, N.Y.

Ammonia compressors are arranged to operate as two sets, each set having one high stage and one low stage machine.

Compressors of set No. 1, both low stage or booster and high stage, have 50 per cent capacity unloaders (see drawing next page).

Second set of machines is base set and does not have unloaders. Thus, compressors can be operated at capacity of 100, 75, or 50 per cent of full load, or off.

Automatic operation

Design temperature of −8 F is maintained through pressure control valves in ammonia suction lines. Valves close or open electric circuits to start, stop or cause reduced-capacity operation of compressors.

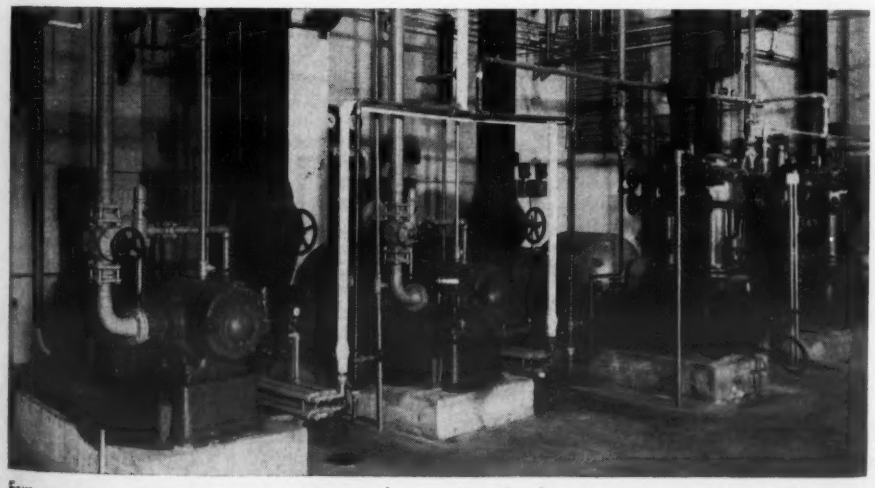
As load decreases from full capacity (all compressors running), suction pressure drops and controls actuate capacity unloader on rotary booster and high stage compressor on No. 1 set. Both compressors then operate at half capacity.*

Further decrease of load, resulting in further pressure drop, will automatically shut off set No. 1. Hand-closing of stop valve is not necessary because of built-in check valve in discharge line of booster.

Should load continue to drop and suc-

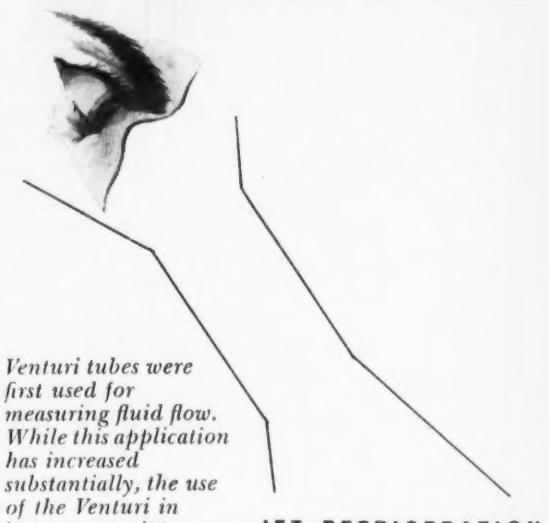
(*Continued on page* 130)

*Machines still run at same speed but capacity and horsepower are lowered. Rotary booster compressors are specifically designed for high volumes of gas at low pressures. They have a pressure rise up to 45 psi. Reciprocating machines are usually designed for 20 psi suction and raise pressure to about 175 psi.



Four compressors, two reciprocating 9x9 units for high side (upper right) and two rotary units as boosters for low side (left center), make up 100 tons of refrigeration. In operation, machines are "teamed"; one low stage and one high stage compressor to a set

ENGINEERING PERSPECTIVE
THROUGH A
VENTURI



Venturi tubes were first used for measuring fluid flow. While this application has increased substantially, the use of the Venturi in important unit process operations has increased even more. A Jet-Venturi combination is literally the heart of many important manufacturing processes.

JET REFRIGERATION
JET COMPRESSORS
JET CONDENSERS
JET HEATERS
JET PUMPS
JET MIXERS
JET REACTORS
JET ABSORBERS
JET FUME SCRUBBERS
SPECIAL JET VENTURI UNITS

During the first several years of the forty-two year history of our firm, we specialized entirely on steam jet vacuum pumps (ejectors). Many thousands of these are in service throughout the country and in most foreign countries. Our tradename, EVACTOR, is an important word in engineering circles. While steam jet vacuum pumps are still our major item, other applications of Jet-Venturi equipment are increasing constantly. With the exception of closely related products such as barometric condensers, chill-vactors, and CONVACTOR* systems, all of our activity is directed to the one purpose of making Jet-Venturi units more efficient, more dependable, more economical, and to apply them to an increasing number of industrial applications.

*The CONVACTOR is a dual condensing system for economic and efficient recovery of high boiling components from water vapor.

CROLL REYNOLDS

Croll-Reynolds CO., INC.

Main Office: 751 Central Avenue, Westfield, N. J.
New York Office: 17 John Street, N. Y. 38, N. Y.

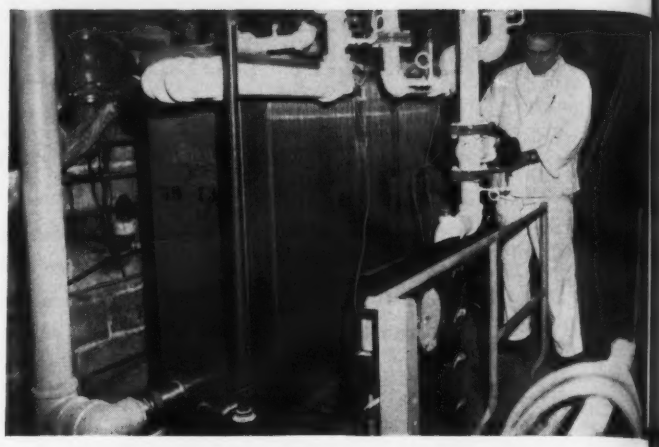
5210 on Reader Service Slip.

Fred Wheelwright, Manager, Industrial Sales:

"One of the most pressing problems in the food industry today is upgrading processing efficiency. It's one of our specialties here at De Laval, and we go at it with a triple punch: outstanding engineering staff, the most complete processing pilot plant in the country, and a full line of outstanding process equipment.

"There are cases where it is relatively easy . . . replacing more traditional processing methods with modern, high speed and high capacity process equipment. Sometimes, it's only a part of the process that needs improving; in other cases, our engineering staff has developed a whole new system. (Note the panel dealing with the De Laval Potato Starch Process.)

"But whatever the problems . . . in heating or cooling, separation or recovery . . . we've found that we can almost always increase processing efficiency through careful selection of exactly the right process equipment. Our engineering staff and pilot plant facilities are at your disposal. And there is no obligation to you, of course."



THREE PROCESSING
SOLVED WITH

For further information write to

DE LAVAL

THE DE LAVAL SEPARATOR COMPANY, Dept. F-5
Poughkeepsie, New York
5724 N. Pulaski, Chicago 46, Illinois

DE LAVAL PACIFIC COMPANY, Dept. F-5
201 E. Millbrae Avenue, Millbrae, California

BREWER GETS GREATER YIELD AT LESS COST WITH CENTRIFUGAL PROCESSING

The De Laval Wort Clarifiers illustrated here are removing trub from wort at efficiency never paralleled by more traditional methods.

Centrifugal processing not only detrubs wort more thoroughly than any other processing method, it also takes considerably less time. Because it is a completely mechanical process, it increases wort yield as much as 4% per brew!

The use of wort clarifiers eliminates the use of filters, ends costly filter pad and earth replacement. As you can see in the illustration, the space requirements of the wort clarifier are small.

Stainless steel or other non-corrosive metals form every part of the wort clarifiers that come in contact with the trub or wort. From brew kettles to fermenting tanks, De Laval Wort Clarifiers insure completely sanitary handling. All these facts help in producing a biologically clean and stable beer.

De Laval centrifugal separators offer the food processor unmatched efficiency (often greater yields), complete sanitary features, and space and labor savings. Send us a line describing your process. We'll gladly furnish you with descriptive literature which may well open the door to greater processing efficiency and reduced costs. No obligation, of course.

PLATE HEAT EXCHANGER ELIMINATES BACTERIA PROBLEMS IN COOLING MOLASSES

Traditionally, molasses has been cooled in open cascade coolers. This presented serious problems of contamination from air-borne bacteria.

Installation of a De Laval Plate Heat Exchanger completely eliminated these problems. The unit illustrated here cools 60 Brix sucrose from 180°F. to 157°F. as it circulates in counterflow to 67 Brix sucrose at 110°F. Another section further cools 60 Brix sucrose to 90°F. by means of 70°F. water.

The gasket-sealed plate pack is constructed entirely of stainless steel. The pack is easily opened for cleaning when necessary. The correct temperature is easily regulated and maintained, and the unit requires little or no maintenance.

If your process could benefit from the precision temperature control in either heating or cooling, or if the better than 90% efficiency in heat recovery and transfer would serve your process well, why not drop us a line? We'll gladly furnish you with full information and product details. And there is no obligation, of course.

PROBLEMS . . .
DE LAVAL PROCESSING EQUIPMENT

CENTRIFUGES • PLATE HEAT EXCHANGERS • VIBRATING SCREENS • COMPLETE PROCESSES

1 HOUR FROM RAW POTATO TO TOP-GRADE STARCH . . . WITH PROFIT IN BY-PRODUCT, TOO

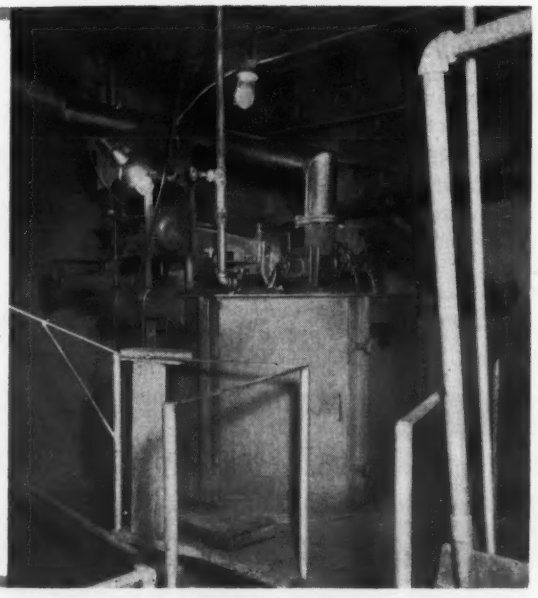
Automation came to starch production with the recent introduction of the De Laval Potato Starch Process. It means that in one hour, you get top-grade starch from cull potatoes with a minimum of labor, low power requirements, and incredibly low water requirements.

The De Laval Potato Starch Process recovers more starch than any other method from any grade of raw material.

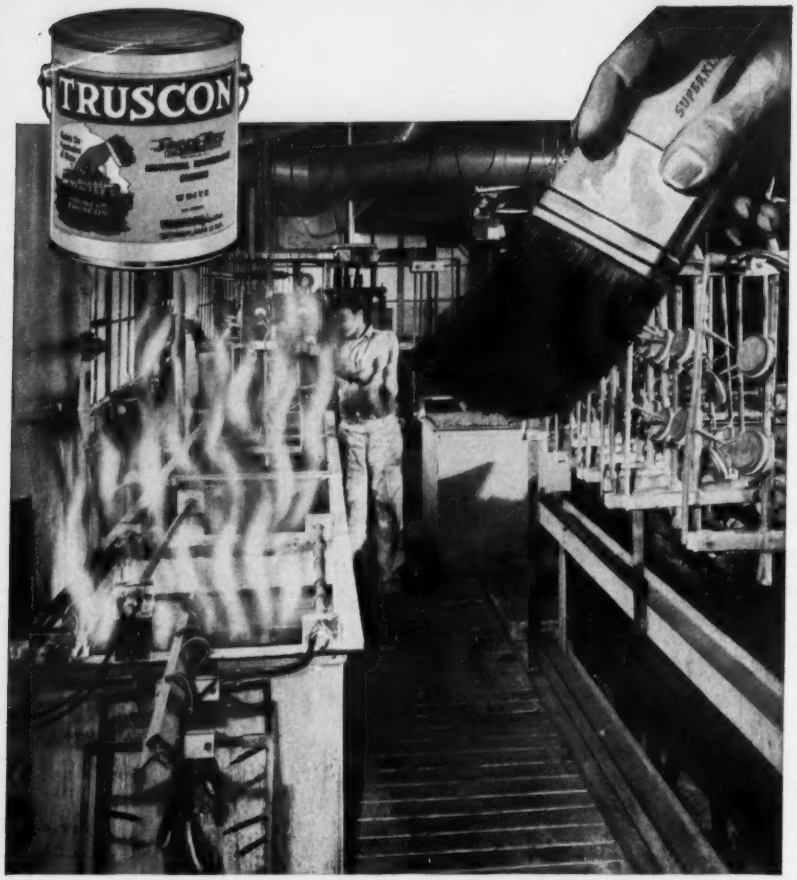
Even more, at the end of the process, the pulp produced is so dry that it is readily usable as cattle feed . . . a source of extra profit that can repay as much as 40% of the original raw material investment.

The entire process takes up very little room. This is important in keeping construction costs down on initial installation. In existing plants, it often allows for increased capacities without any additional construction.

This may not be the process which applies within your own field, but it does indicate the scope of De Laval's processing development work. If you feel that there is room for improvement in your present operation, why not contact De Laval? If it's a minor bottleneck or a whole new process, our staff and facilities are at your disposal with no obligation to you.



5211 on Reader Service Slip.



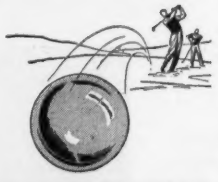
STOP CORROSION
from destroying your plant!

TRUSCON *"Speed Rex"* Protects Metal, Concrete and Wood Against The Ravages of Acids, Alkali, Moisture!

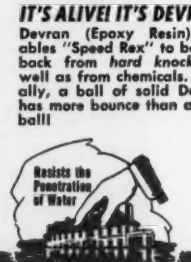
Truscon's business is helping your Maintenance Department cut costs, prevent expensive damage to your plant and equipment.

One of Truscon's products that can be tremendously helpful to your Maintenance Chief is "Speed Rex" . . . an all-purpose coating that owes its outstanding characteristics to DEVRAN, an Epoxy Resin that imparts to paint greater resistance to corrosive chemicals.

Maintenance Problem? **TELL IT TO TRUSCON!**



IT'S ALIVE! IT'S DEVRAN!
Devran (Epoxy Resin) enables "Speed Rex" to bounce back from *hard knocks* as well as from chemicals. Actually, a ball of solid Devran has more bounce than a golf ball!



TRUSCON Laboratories
Division of Devoe & Raynolds Co., Inc., Detroit 11, Michigan

5212 on Reader Service Slip.

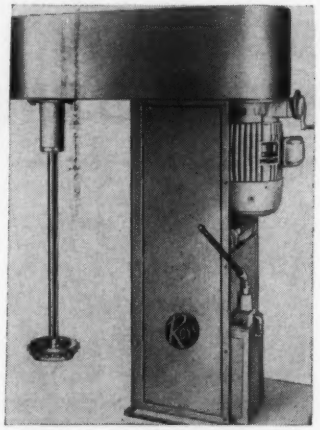
Disperser millhead has 4 different actions

Saves time in emulsifying and deglomerating liquids or pasty materials

Uses-Features: Specially designed multiple action impeller or millhead effectively mixes, disperses, dissolves most types of liquids, paste or heavy paste materials.

Operation: Material is drawn down into millhead by specially pitched impeller vanes and thrown at high speed with great impact against special baffles to break down lumps or agglomerates.

Further abrasive action occurs as material is pumped through a very narrow orifice which has spaced disperser bars.



Disperser is manufactured in standard size as shown. It is also available in laboratory or very large production models

The third separate force the material is subjected to is the sawtooth cutting or shearing action of the specially set teeth spaced around the outer periphery of the millhead.

Lastly, material is jetted out laterally in very thin stream at high speeds through slower moving surrounding material for maximum hydraulic shear. Cycle is repeated many times as each particle of material is recirculated continuously through millhead.

Description: Machine can be used with 55 gallon drums or tanks up to 40 inches diameter by 45 inches deep.

Impeller is readily raised out of tank by simple hydraulic jacking unit. Variable speed adjustment for millhead permits speeds from 2095 fpm up to 10,323 fpm.

Shaft and millhead are made of stainless steel.

(Disperser is a product of Charles Ross & Son Company, 148 Classon Ave., Brooklyn 5, N.Y.)

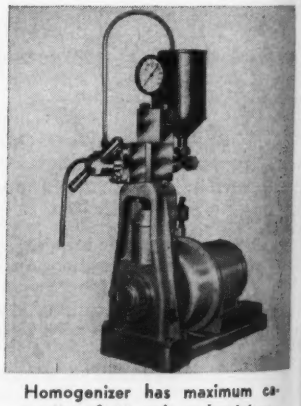
For more information circle 5213 on Reader Service Slip.

Lab Homogenizer for Rent

For research, pilot plant and limited production

Lab homogenizer, designed for research, pilot plant and limited production requirements, may now be rented on a monthly basis, with rental charges being applicable against purchase price.

Homogenizer reduces ingredients in products to ultimate particle sizes. Emulsions and dispersions are broken down to extremely fine particle size, providing maximum degree of uniformity and stability.



Homogenizer has maximum capacity of 15 gph and minimum processable sample is one pint. Operational pressures are 8000 psi continuous; 10,000 psi intermittent

Unit may be disassembled in minutes, and all parts in

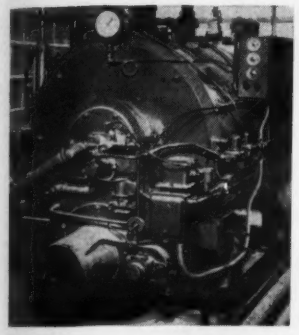
contact with product are readily removed for inspection and cleaning.

It is a single-plunger, positive displacement machine, designed into a compact unit.

(Gaulin Laboratory Homogenizers are product of Manton-Gaulin Mfg. Co., Inc., Everett 49, Mass.)

For more information circle 5214 on Reader Service Slip.

Boiler proves economy over purchased steam



At new location of Hostess Products Corporation, Brooklyn, the 40 hp boiler shown provides steam on a few minutes notice at a fraction of former cost.

Prior to moving, the company —manufacturers of mayonnaise and dressings—bought steam at cost of $120 per Saturday and excessively high rate for balance of week.

(Cyclotherm generators are made by the Cyclotherm Division of US Radiator Corporation, Dept 31, Oswego, N.Y.)

For more information circle 5215 on Reader Service Slip.

Plastic equipment beats corrosion

Six-page brochure is a review of products made of polyethylene or a combination of this plastic with steel.

Such items as ventilation hoods, sinks, funnels, ducts, laboratory equipment and plastic-lined steel tanks are illustrated and described.

(Copies of "Plastic Fabricator," are available from the American Agile Corporation, PO Box 168, Bedford, Ohio.)

For more information circle 5216 on Reader Service Slip.

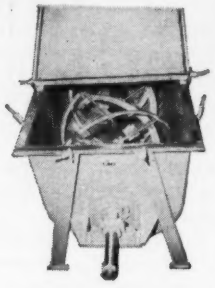
NEW...

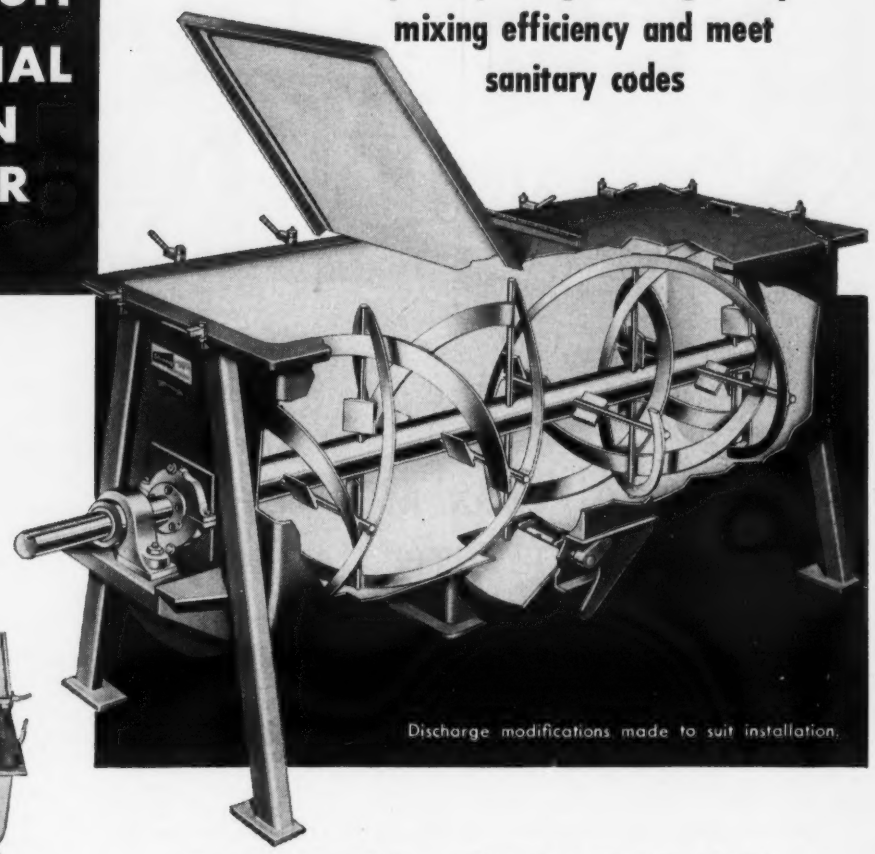
STRONG-SCOTT

INDUSTRIAL RIBBON BLENDER

Specially designed to give top mixing efficiency and meet sanitary codes

Rounded tub ends prevent material hang-up, neoprene cover-seals provide dust-tight fitting.





Discharge modifications made to suit installation.

- Swing or slide-type discharge gate, curved to eliminate dead pocket.
- Unique coupling permits vertical removal of agitator assembly without disturbing shaft ends and bearings.
- Heavy-duty, outboard anti-friction bearings.
- Air-purge, lip seal or stuffing box seals readily removed for quick cleaning.
- Dust-tight covers, with quick-action clamps.

Top mixing efficiency with the new Strong-Scott Ribbon Blender mixer on dry or semi-dry materials, has been proven through continuous testing. The Ribbon Blender also meets requirements of health codes where necessary.

The ability to thoroughly and quickly mix is provided by a unique "ribbon assembly." The smallest amount of additives are thoroughly mixed in a matter of minutes. Special smooth-surface, cornerless welding and rounded corners throughout, leave no place for material to gather. The cover is seal-tight for maximum cleanliness and dust control.

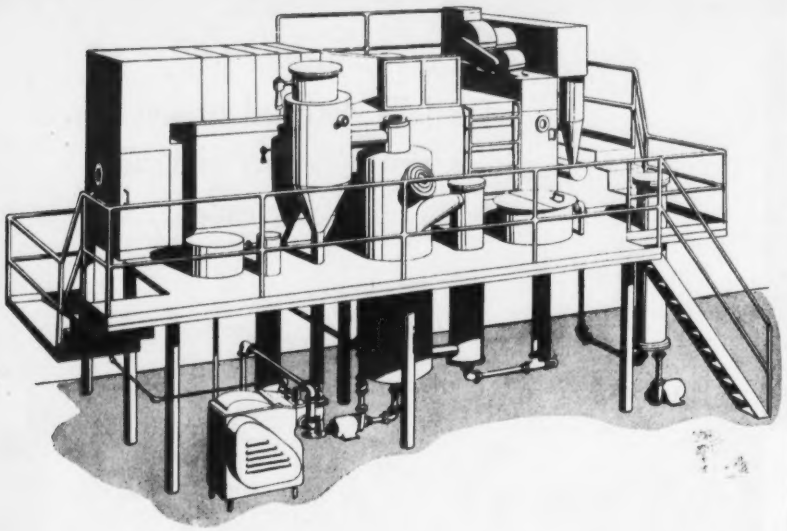
Nine different size units ranging from 16 to 300 cubic feet working capacity are available in stainless steel or carbon steel. Jackets for heat transfer mediums also available.

PLAN '59 Modernize now for growth and profits

The Strong Scott Mfg. Co.

451 Taft Street N. E., Minneapolis 13, Minnesota

5217 on Reader Service Slip.



The BLAW-KNOX MILK DRYING PILOT PLANT WITH CAPACITIES UP TO 175 POUNDS PER HOUR

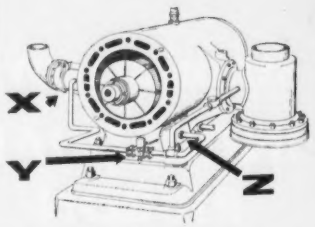
NOW LARGE DAIRIES CAN RESEARCH SPECIALTY PRODUCTS . . . SMALL DAIRIES CAN SOLVE SEASONAL SURPLUS PROBLEMS

All in one "package" the evaporator and spray dryer are shipped to you complete with milk preheater, storage tank, high concentrate heater, surge tank, high pressure pump, sifter and all inter-connecting sanitary piping. Easy reassembly eliminates field welding. Fitted at factory, shipped to you ready for steam, water and electrical connections. Built to Sanitary Dairy 3-A standards, the "Pilot Plant Package" will handle all types of dairy products, non-fat milk, whole milk, whey, buttermilk, dietetic foods and others. Ask for Bulletin 590 for more details and specifications.

BLAW-KNOX

BLAW-KNOX COMPANY
Dairy Equipment Division
Mora, Minnesota

5218 on Reader Service Slip.



In operation capacity of rotary compressor is changed by built-in capacity unloader which bleeds off compressed gas from discharge line (X), passes it through solenoid control valve (Y) and discharges it into capacity-unloader-expander pocket (Z). Solenoid valve in line opens and closes to regulate capacity according to demand of refrigeration load

(*Continued from page* 125)

tion pressure fall below a fixed control point, both machines of set 2 will also stop.

Heat-gain and resulting rise in load, accompanied by rise in suction-line pressure, will reverse cycle.

Automatic restart of compressors is not a problem. There is no load on the reciprocating machine until rotary booster is under load and booster starts under fully unloaded condition. Note that vanes on rotary compressor—see diagram—are not fully extended until rpm reaches 35 per cent of normal operating speed.

Seasonal fluctuations, because of infiltration and other heat gains, increase or decreases load gradually. However, its effects on evaporative-condenser operation are immediate.

Air sensing thermostats start and stop condenser-spray water pumps. They are arranged to stop when outside temperatures fall below 40 F.

Therefore during changing seasons of spring and fall, condensers operate wet during the day and dry at night.

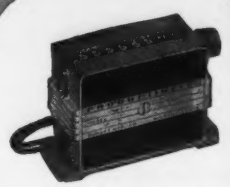
Operating engineer is on duty 8 hours per day; five days per week.

Balance of time, fully automatic operation is monitored by ADT system which signals any dangerous conditions.

(Rotary booster compressors are a product of Freezer Equipment Sales, Inc., 1405 N. Duke St., York, Pa.)

For more information circle 5219 on Reader Service Slip.

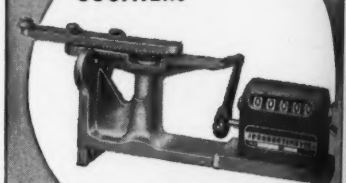
Count ALL PRODUCTION *with accurate, dependable* DURANT PRODUCTIMETERS



ELECTRIC COUNTER

HEAVY DUTY STROKE ACTION

BOTTLE AND CAN COUNTERS



CASE COUNTER

Eliminate profit-eating losses . . . Productimeters register accurate count of every unit processed . . . insure economical plant operation and maximum use of man hours.

DURANT MANUFACTURING CO.

Send for CATALOG 51-55

1951 N. Buffum St., Milwaukee 1, Wis.
51 Thurbers Ave., Providence 5, R.I.
Representatives in Principal Cities

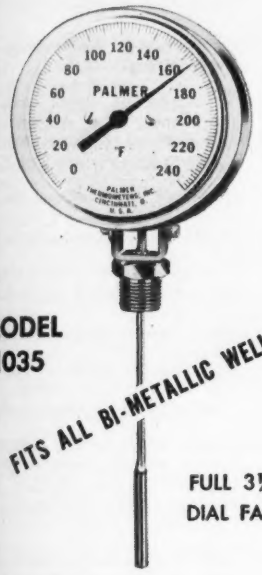
PRODUCTIMETERS SINCE 1879 *Count Everything*

5220 on Reader Service Slip.

Outstanding Accuracy

PALMER

Dial Thermometer



Check these functional features

- Direct-drive Bourdon Coil with a filled system for longer lasting accuracy.
- Stem can be placed at any desired angle and case can be rotated to most readable position.
- External calibration for zero setting.
- Unaffected by stem alignment.
- Accurate to one scale division.
- No sticking at any temperature.
- Non-corrosive case.

PALMER

THERMOMETERS, INC.

Mfrs. of Industrial Laboratory, Recording and Dial Thermometers

2515 Norwood Ave., Cincinnati 12, O.

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new literature Classified Listing

- **Equipment**
- **Ingredients**
- **Supplies**

Starred* items below have been more extensively reviewed elsewhere in the magazine. Items followed by dagger† indicate literature offered by advertisers. Key number in the last line will help locate the reviews and advertisements, which are numbered in sequence throughout the magazine.

Processing Equipment, Accessories

Packaged liquid coolers with storage tank*, 2 pp, Doyle & Roth Manufacturing Company
Circle 5201 on Reader Service Slip.

Handbook of High Voltage Electron-Beam Processing*, 32 pp, (Bul P) High Voltage Engineering Corporation
Circle 5029 on Reader Service Slip.

Mechanical bread twisting and panning*, 4 pp, Baker Perkins, Food Machinery Div.
Circle 5200 on Reader Service Slip.

Magnetic separation at high belt speeds*, 8 pp, (Bul 1011) Stearns Magnetic Products
Circle 5206 on Reader Service Slip.

Wood tanks & their hardware*, 2 brochures, 4 pp each, Arrow Tank Company, Inc.
Circle 5196 on Reader Service Slip.

Corrosion-resistant plastic products*, 6 pp, American Agile Corporation
Circle 5216 on Reader Service Slip.

Rent a lab homogenizer†, (Bulletins) Manton Gaulin
Circle 5197 on Reader Service Slip.

Low-cost cleaning and dewatering of food products†, (Book 2777) Link-Belt
Circle 5008 on Reader Service Slip.

Seamless containers simplifies food handling†, (Cat) Pressed Steel Tank Company
Circle 5076 on Reader Service Slip.

Spray nozzles for every spraying application†, (Data Sheets) Spraying Systems Co.
Circle 5009 on Reader Service Slip.

Quick-to-clean food pump pumps suspended solids†, (Bul 34 FP) Robbins & Myers, Inc.
Circle 5002 on Reader Service Slip.

Pyrogen-free sterile water direct from boiler steam†, (Brochure) Wilmot Castle Co.
Circle 5207 on Reader Service Slip.

How plate heat exchangers solved processing problems†, (Literature) De Laval Separator
Circle 5211 on Reader Service Slip.

Rapidly clean, inspect centrifugals†, (Bul 356) Heyl & Patterson, Inc.
Circle 5012 on Reader Service Slip.

Screens and feeds bulk materials ranging in size from 325 mesh to 2 in., 2 pp, (Cat) Syntron Co.
Circle 5222 on Reader Service Slip.

Space filters with replaceable filter elements, 8 pp, (Bul 1505-5) Mine Safety Appliances Co.
Circle 5223 on Reader Service Slip.

No barometric legs needed for steam-jet vacuum pumps, 4 pp, (Bul 5H-HS) Schutte & Koerting
Circle 5224 on Reader Service Slip.

Protects product flavor by vacuum or steam and vacuum, 4 pp, (Suppl. to Bul E-1255) The Creamery Package Mfg. Co.
Circle 5225 on Reader Service Slip.

SS homogenizers with capacity ranges from 1000 to 6000 gph, 12 pp, (Bul G-562) Cherry-Burrell Corp.
Circle 5226 on Reader Service Slip.

Ingredients, Food Additives

Formulations for fruit pie fillings with pre-cooked starch*, (10 Product Information Sheets) Morningstar-Paisley
Circle 5107 on Reader Service Slip.

Improve cell wall control in yeast-raised foods*, 12 pp, Atlas Powder Co.
Circle 5109 on Reader Service Slip.

Food-grade antioxidants*, 4 pp, Eastman Chemical Products, Inc.
Circle 5115 on Reader Service Slip.

The enzyme approach to fermentation*, 4 pp, Evans Research
Circle 5113 on Reader Service Slip.

Antioxidants for edible animal fats*, 12 pp, (Bul G-105) Eastman Chemicals
Circle 5110 on Reader Service Slip.

Lists over 50 flavor ingredients*, 36 pp, (Cat) Florasynth Labs.
Circle 5123 on Reader Service Slip.

BAKERS!

Test Your Know-How

Do you know these important ways Sta-Sol® Lecithin Concentrate can improve the quality of your baked goods?

As an emulsifier and anti-oxidant, Sta-Sol Lecithin Concentrate is second to none. And because it is so effective, only a small amount is required to give you softer texture, reduced stickiness, prolonged shelf life, better distribution of fats and shortenings. Available in fluid or semi-solid form, bleached or unbleached, Sta-Sol provides a number of important advantages.

PIE DOUGHS—Sta-Sol produces a drier, easier-handling dough with a more uniform baked color. Makes a tender, flakier crust. Retards formation of stale or rancid flavors due to oxidation.

BREAD, BUNS, ROLLS—Sta-Sol affords a silkier crumb, a more tender crust. Produces a drier dough with less stickiness, better machinability. Gives a more uniform grain, more uniform crust color. Retards staling, extends shelf life.

SWEET DOUGHS—In yeast-raised doughnuts and cake doughnuts, Sta-Sol provides better machinability with a cleaner deposit. Produces a more uniform, richer color, with a smoother texture and grain. Retards rancidity.

COOKIES—Sta-Sol produces a drier dough with a more even and uniform color. Reduces "checking."

ICINGS and FILLINGS—Sta-Sol affords better gloss and sheen; smoother texture. Produces a more pliable product that's easier to apply. Reduces surface hardening; extends shelf life.

For complete information on Sta-Sol Lecithin Concentrate and how it improves the quality of your baked goods, write today to:

A. E. Staley Mfg. Co., Decatur, Ill.

Staley's®

Branch Offices
Atlanta • Boston • Chicago
Cleveland • Kansas City • New York
Philadelphia • San Francisco • St. Louis

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WHO SWIPED PAGE 61

D'ja ever pick up a copy of FOOD PROCESSING with an article torn out . . . or even worse, HALF an article torn out?

It's liable to happen when copies are routed around your plant.

You can avoid this annoyance by getting your own copy of FOOD PROCESSING each month. It's easy and there is no charge. Just fill in the subscription request form opposite the inside back cover.

Ingredients

Introduction to cultured butter flavors*, 3 pp, Henry C. Ottens
Circle 5119 on Reader Service Slip.

Information about lemons and lemon processing*, 28 pp, Hurty-Peck & Company
Circle 5108 on Reader Service Slip.

Dairy whey to improve quality and lower ingredient cost†, (Tech. Bulletins) Western Condensing Co.
Circle 5264 on Reader Service Slip.

Wholesale flavor price list, 12 pp, (July 1959) Fritzsche Brothers
Circle 5228 on Reader Service Slip.

Packaging, Labeling, Cartoning

Automatically wraps many package shapes, sizes at high speeds*, 12 pp, Food Machinery
Circle 5152 on Reader Service Slip.

Questions on package materials*, 4 pp, Riegel Paper Corporation
Circle 5144 on Reader Service Slip.

Corrugation for heavy-duty shipping containers*, 4 pp, Stone Container Corp.
Circle 5153 on Reader Service Slip.

How to wrap meats*, 38 pp, American Viscose Corporation
Circle 5135 on Reader Service Slip.

Boosts filling speed, improves accuracy of fill, reduces spillage†, (Bul PED 260) Girdler Process Equipment Div. Chemetron
Circle 5031 on Reader Service Slip.

Extra profits with aerosol packaging†, (2 Buls) Air Reduction Co., Inc.
Circle 5004 on Reader Service Slip.

Design and printing on boxes†, (Booklet) Union Bag-Camp Paper Corp.
Circle 5136 on Reader Service Slip.

Rotary piston fillers for high-speed, continuous filling of liquid and viscous food products, 6 pp, Chemetron Corp.
Circle 5229 on Reader Service Slip.

Bulk Handling, Accessories

Case-history use of pneumatic bulk trucks†, (Bul 203) Sprout, Waldron & Company
Circle 5079 on Reader Service Slip.

Rotary vane valves as feeders, airlocks and explosion checks, 4 pp, (Bul 24-D) Sprout, Waldron
Circle 5230 on Reader Service Slip.

Conveyors, Racks, Accessories

Advantages of using cable conveyors*, 4 pp, (Cat) Dearborn Fabricating & Engineering Co.
Circle 5060 on Reader Service Slip.

4 easy steps to selecting the right chain drive†, (Selection Bulletin) Chain Belt Company
Circle 5091 on Reader Service Slip.

Bulk material conveyor elevators for food industries†, (Cats) The Bucket Elevator Co.
Circle 5056 on Reader Service Slip.

Metal-mesh belts for continuous production†, 130 pp, (Reference Manual) Cambridge Wire Cloth Co.
Circle 5053 on Reader Service Slip.

Belt conveyor system that saved food processor up to $90,000 in year's operation†, (Buls 355 and 558) Stephens-Adamson Mfg. Co.
Circle 5015 on Reader Service Slip.

Food belt stays clean, never smells†, (Manual) Buffalo Weaving and Belting
Circle 5050 on Reader Service Slip.

Four basic styles of conveyor belting†, (Cat No. 5) Cyclone Fence, Am. Steel & Wire Corp.
Circle 5040 on Reader Service Slip.

Sanitary conveyor belting for entire food industry†, 20 pp, (Cat) Ton-Tex Corp.
Circle 5064 on Reader Service Slip.

Applications and engineering data on overhead material handling equipment, 12 pp, (Bul 2008-0) Cleveland Tramrail
Circle 5231 on Reader Service Slip.

Information on overhead material handling systems and industry case histories, 52 pp, Louden
Circle 5232 on Reader Service Slip.

All-purpose wire shelving, 4 pp, (Cat 1959) Metropolitan Wire Goods
Circle 5233 on Reader Service Slip.

Stitched-canvas conveyor belting, treated for various applications, 4 pp, Hettrick Mfg. Co.
Circle 5234 on Reader Service Slip.

Low-cost horizontal or inclined powered belt conveyors, 2 pp, (Bul B-152) E. W. Buschman
Circle 5235 on Reader Service Slip.

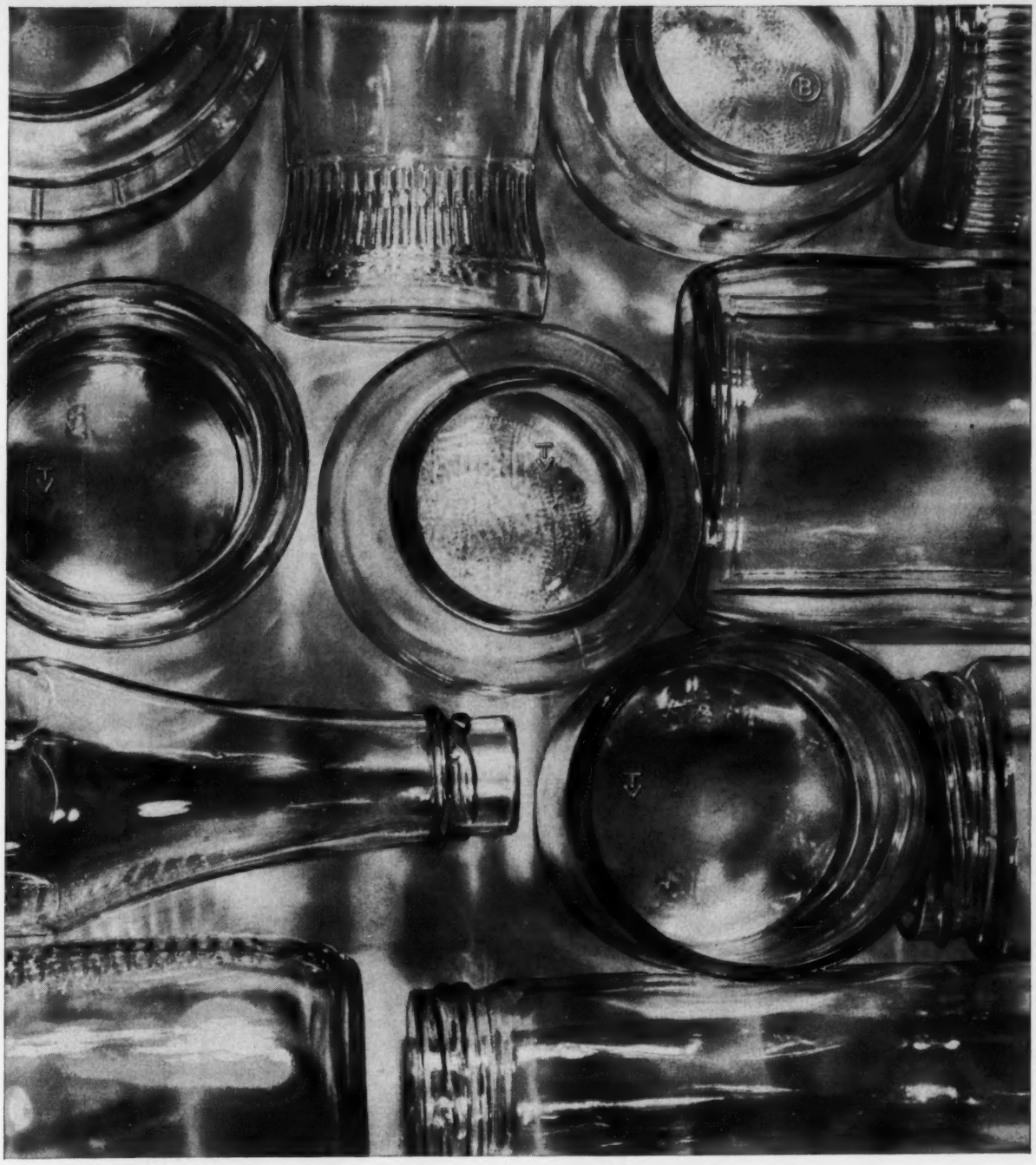
Heavy-duty roller conveyor with spring-action axle, 1 p, E. W. Buschman
Circle 5236 on Reader Service Slip.

Hinged, mobile, aluminum powered-belt conveyor section, 2 pp, (Bul 130A) Hytrol Conveyor Co.
Circle 5237 on Reader Service Slip.

Cleated-belt, floor-to-floor powered conveyor, 2 pp, (Bul 131A) Hytrol Conveyor Co.
Circle 5238 on Reader Service Slip.

Fork Trucks, Accessories

Guide for aisle layout in warehouses†, 8 pp, Automatic Transportation Company
Circle 5044 on Reader Service Slip.



Tygart Valley glass containers emphasize the quality and texture of your food products

Nothing will set up a food product for quick appraisal at the point of sale like a quality glass container. All the appetite appeal of the product shows through . . . and when it's a crystal-clear Tygart Valley glass container, you are assured dimensional uniformity and overall high quality to provide uninterrupted service on the modern, high speed filling line.

SYMBOL OF QUALITY GLASS CONTAINERS
BROCKWAY GLASS
COMPANY, INC., Brockway, Pennsylvania
Sales Offices in Principal Cities
Subsidiary: Tygart Valley Glass Company, Washington, Pa.

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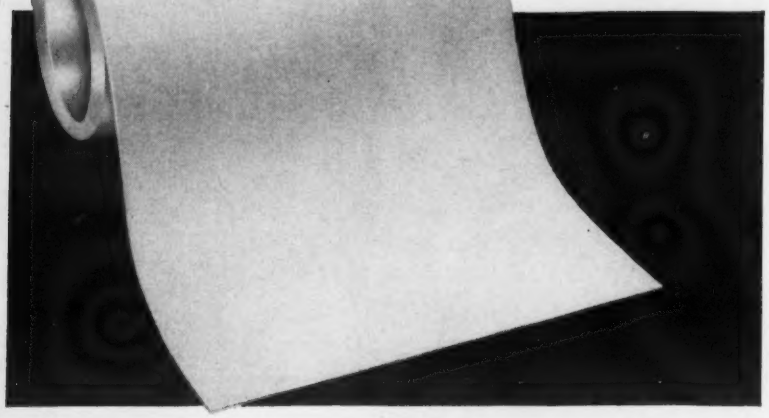
NOTHING STICKS TO Teflon*



FOR FOOD PROCESSING . . . AN ECONOMICAL *time saver*

Prevents delays. As a lining for hoppers, mixers, chutes, Cementable Teflon, with its low coefficient of friction, moves dry powders and sticky batches swiftly, freely. Eliminates material build-up and the need for vibrators.

Eliminates conveyor jamming. Teflon's slippery surface on conveyor guide rails slides packages on their way without jam-up. Preserves shelf appeal of boxes, labels, bags.

Reduces clean-up time. Just wipe off Teflon work surfaces and they are ready for re-use. No lost time in soaking or scraping hardened, gummy food particles.

Cementable Teflon, as made by Garlock's Plastics Division, the United States Gasket Co., is non-contaminating, odorless, colorless, tasteless, non-absorbent. It can be bonded to metal, wood, glass, concrete, other surfaces. Available in continuous tapes .005″ through .096″, through 24″ wide, and in sheet through 48″ x 48″.

See how you can put this time-saver to work. Contact one of the Garlock Packing Company's 26 sales offices and warehouses in the U. S. and Canada, or write for Catalog AD158.

United States Gasket

THE GARLOCK PACKING COMPANY, Palmyra, N. Y.

*DuPont Trademark for T.F.E.-fluorocarbon resin

Plastics Division of GARLOCK

5240 on Reader Service Slip.

new literature

Fork Trucks, Accessories

Leasing lift trucks†, (Elpar Lease Plan Booklet) The Elwell-Parker Electric Co.
Circle 5075 on Reader Service Slip.

Double-duty lift truck for high or low ceilings†, (Bul SP-25) Towmotor Corporation
Circle 5070 on Reader Service Slip.

A lift truck for every purpose and material†, (Bul KHL) Lift Trucks, Inc.
Circle 5065 on Reader Service Slip.

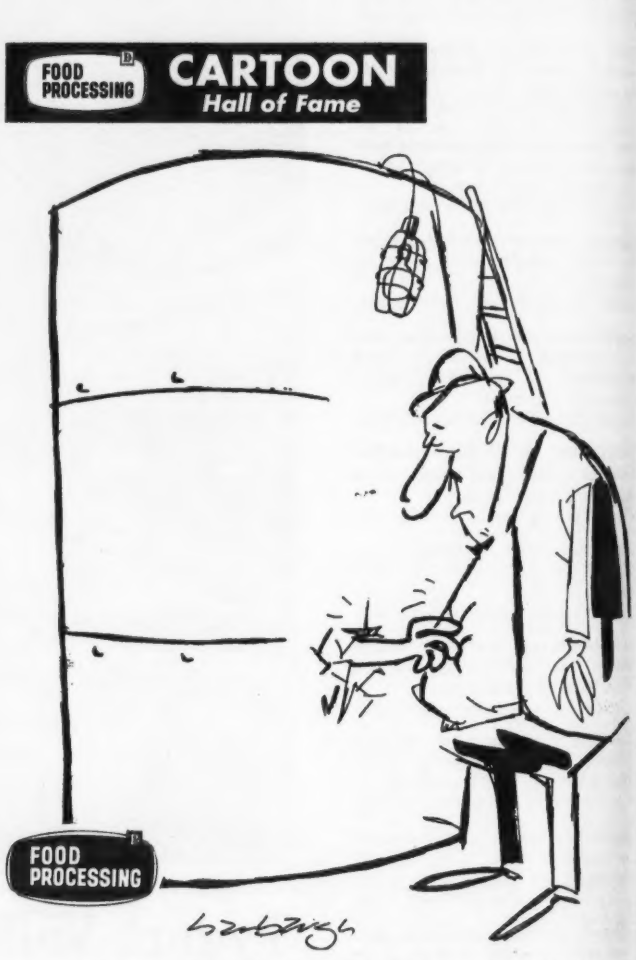
Case study of electric industrial trucks in use at grocery warehouse, 4 pp, (Report #24) Raymond Corp.
Circle 5241 on Reader Service Slip.

Two plug-in models of silicon chargers for 12-volt batteries, 2 pp, (Bul AR-103) C & D Batteries
Circle 5242 on Reader Service Slip.

Space-saving multi-circuit chargers for electric truck batteries, 2 pp, (Bul 6276) Exide
Circle 5243 on Reader Service Slip.

Pictorial review of advantages of line of fork lift trucks, 16 pp, (Bul BU-451A) Allis-Chalmers
Circle 5244 on Reader Service Slip.

FOOD PROCESSING CARTOON *Hall of Fame*



"The liner's still intact, chief, but the walls are awful flabby."

A second laugh

Just as the bowler is returning to men's fashions, best cartoons from past issues of FOOD PROCESSING will appear again, from time to time in forthcoming issues.

The cartoons, in the opinion of the editors, are particularly humorous and will be published larger than when they originally appeared in FOOD PROCESSING.

Undoubtedly, you too have clipped some cartoons from FOOD PROCESSING that struck your funny bone. Tell us about them so that your favorite can be considered for re-publishing in the FP Hall of Fame.—EDITOR

Accessories and optional equipment for line of lift trucks, 8 pp, (Bul BU-497) Allis-Chalmers
Circle 5245 on Reader Service Slip.

New 3000-lb capacity lift truck, 4 pp, (Bul BU-600) Allis-Chalmers
Circle 5246 on Reader Service Slip.

Clamps and other attachments for line of lift trucks, 4 pp, (Bul BU-499) Allis-Chalmers
Circle 5247 on Reader Service Slip.

New "Power Shift" torque converter drive for lift trucks, 8 pp, (Bul BU-465-A) Allis-Chalmers
Circle 5248 on Reader Service Slip.

Pneumatic-tired trucks of 3000- and 4000-lb capacity, 4 pp, (Bul BU-498) Allis-Chalmers
Circle 5249 on Reader Service Slip.

Over-the-Road Trucks

Owners' reports on big Fords in long-haul service, 8 pp, Ford Motor Co.
Circle 5250 on Reader Service Slip.

Controls, Regulators, Indicators

Automatic weight control reduces bread giveaway*, 6 pp, FMC Packaging Machinery Div.
Circle 5165 on Reader Service Slip.

Accurate feeding of water treatment chemicals†, (Bul M-38) Wallace & Tiernan
Circle 5159 on Reader Service Slip.

Automatic, in-motion checkweighing†, (Bul 2490) Toledo Scale
Circle 5069 on Reader Service Slip.

Counter for every operation†, (Cat 51-55) Durant Mfg. Co.
Circle 5220 on Reader Service Slip.

Equipment, systems and controls for process industries, 8 pp, (Bul B-I-F 5-1) B-I-F Industries, Inc.
Circle 5251 on Reader Service Slip.

Laboratory Instruments, Accessories

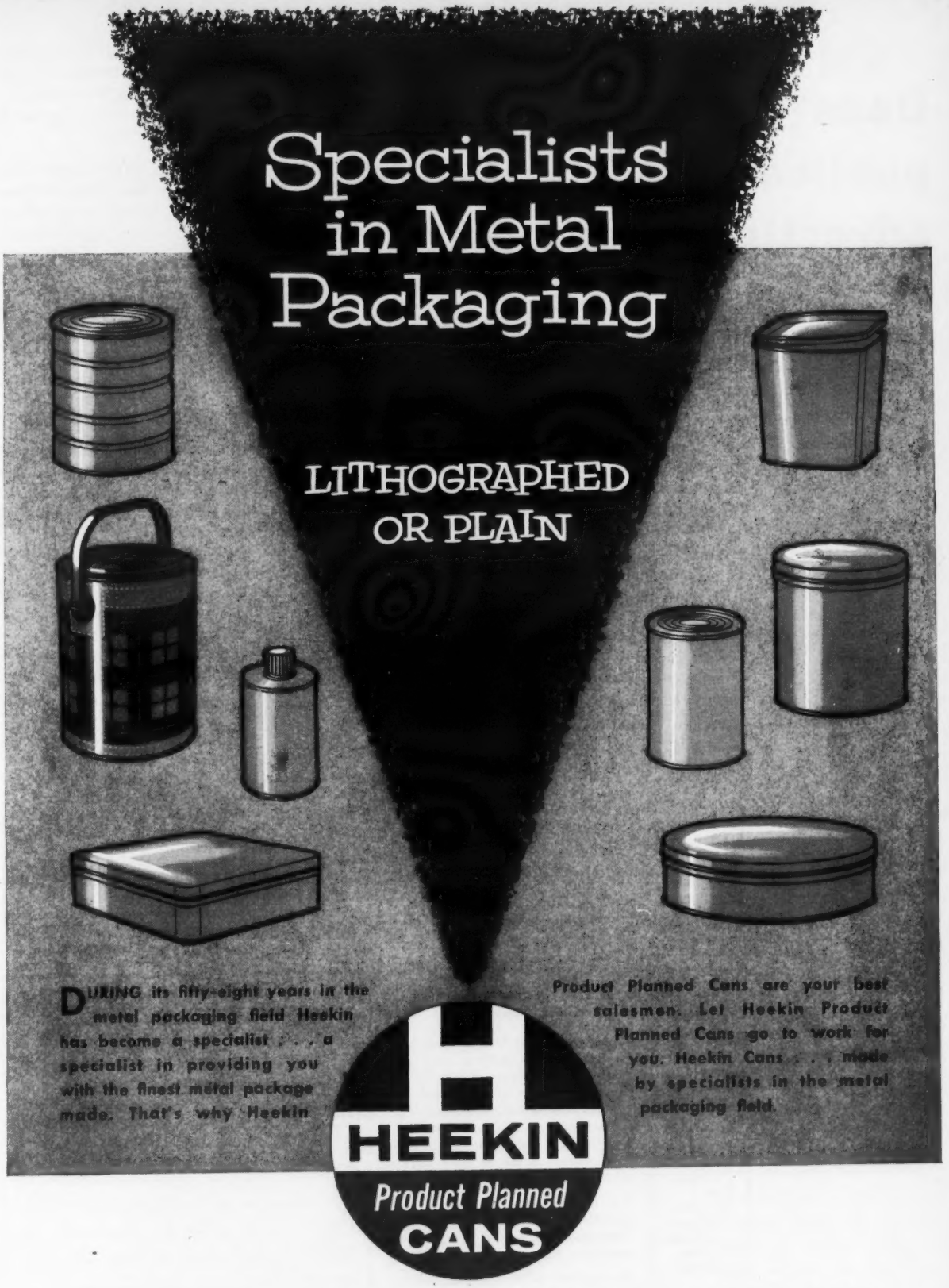
Low-cost refractometer offers fast testing†, (Cat D-280) Bausch & Lomb
Circle 5154 on Reader Service Slip.

Hand refractometer easy to use for numerous tests†, (Bul CQ1) National Instrument Co.
Circle 5193 on Reader Service Slip.

675 infrared spectroscopy application references, (Bul 754) Beckman
Circle 5252 on Reader Service Slip.

NMR moisture determination tests made in samples of rolled oats in 30 sec., 2 pp, (Material Study Report #24.58) Schlumberger
Circle 5253 on Reader Service Slip.

Analytical ultracentrifuge, 16 pp, (Bul SBE-3) Beckman/Spinco Div.
Circle 5254 on Reader Service Slip.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"We have so many small customers I can't call on all of them, so advertising must carry a large part of the load for the small orders we get from such people which add up to a great deal of tonnage. Advertising also gets across the fact that we warehouse standard chemicals right here in the city and can give prompt service.

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These are just some of the ways I know advertising is working for me—even while I'm fishing. It calls on people I can't get to see, and calls on the others more often than I can possibly do in person, and suggests new uses for our products."

Ask your own salesmen what your company's business publication advertising does for them. If their answers are generally favorable, you can be sure that your business publication advertising is really helping them sell. If too many answers are negative, it could well pay you to review your advertising objectives — and to make sure the publications that carry your advertising are read by the men who must be sold.

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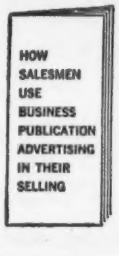

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Name

Title

Company

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City Zone State

new literature

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Describes performance and flexibility of prism-grating infrared spectrophotometer, 20 pp, (Bul 739-A) Beckman Scientific, Process/Instruments Div.
Circle 5256 on Reader Service Slip.

Micro accessories for junior spectrophotometer, 2 pp, (Bul B-252) Coleman Instruments
Circle 5257 on Reader Service Slip.

Equipment catalog of selected items for general research, production, quality control, 200 pp, (Equipment Cat) Cole Parmer Instrument Co.
Circle 5258 on Reader Service Slip.

Food processing applications for gamma radiation gaging of product density, 1 p, (Bul OS-1) Ohmart Corporation
Circle 5259 on Reader Service Slip.

pH meter titration, 4 pp, (Bul 79-MI) 2 pp, (Bul Z-80-MI) Beckman Scientific
Circle 5260 on Reader Service Slip.

Sanitation and Maintenance

Sewage and Industrial Waste Treatment*, 20 pp, (Book 2617) Link-Belt Company
Circle 5177 on Reader Service Slip.

Oxychloride cement sample kit*, Acme Asbestos Covering and Flooring Company
Circle 5170 on Reader Service Slip.

Cleans, sanitizes, deodorizes in one operation†, (Bul F-9414) Oakite
Circle 5178 on Reader Service Slip.

Many uses for cementable Teflon†, (Cat AD158) Garlock Packing Co.
Circle 5240 on Reader Service Slip.

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Dry acid cleaners lower storage cost†, (Booklet) duPont
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Pumps can be operated up to 100% rated speed on thin liquids†, (Cat MEP) Viking Pump Company
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Impulse steam trap and fine screen strainer†, (Steam Trap Book) Yarnall-Waring Co.
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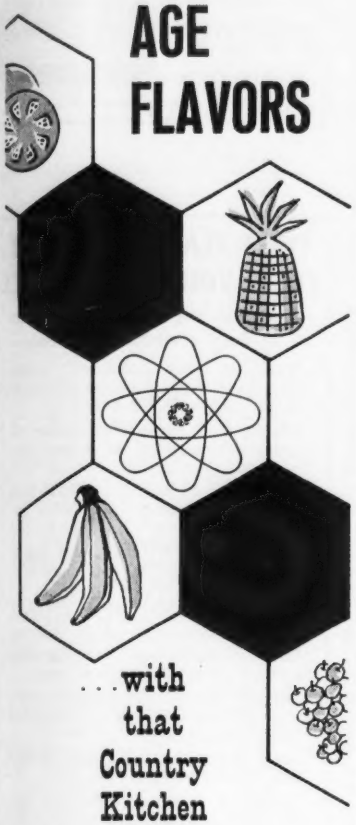

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New York 17, 369 Lexington Avenue, MUrray Hill 6-7738, John A. Mulheren, Eastern Sales Manager; Herman Faiola, District Manager; Raymond V. Morrow, District Manager

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St. Louis, 515 Newport Avenue, Webster Groves, Mo., WOodland 2-4384, Donald F. Maguire

San Francisco 8, 355 Stockton St., YUkon 2-9537, Bob Wettstein & Associates, Jerry Nowell, Gene R. Watts

Southeastern States, 40 Peachtree Place, N.W., Atlanta 9, Ga., TRinity 2-2235, Joe H. Howell

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415 W. Scott, Dept. FP, Chicago 10, Ill.

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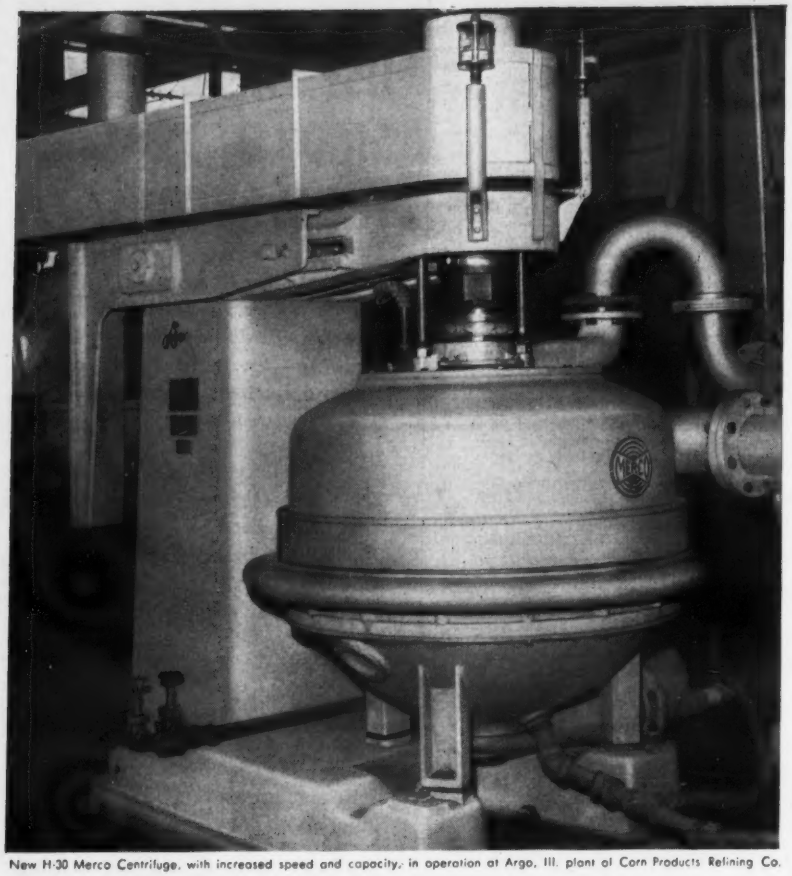

New H-30 Merco Centrifuge, with increased speed and capacity, in operation at Argo, Ill. plant of Corn Products Refining Co.

NOW...
increased capacity in NEW MERCO CENTRIFUGE for nozzle bowl applications

Rotor speeds up to 3300 rpm and capacities up to 600 gpm are now possible with the new, improved H-30 Merco Centrifuge. At the same time, power requirements per gallon of feed have been substantially reduced.

This new operating efficiency is a result of improvements in rotor design, which provides greater disc area. Feed passages have been enlarged to accommodate increased flow.

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If yours is a process that needs a large capacity centrifuge, there is a place for the Merco H-30 in your plant. For further information, write to Dorr-Oliver Incorporated, Stamford, Connecticut.

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Merco—Reg. U.S. Pat. Off.

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October 1959

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* "substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

that's interesting

Beer cans spurt ahead

Slightly more than one out of every five cans produced in 1959 will be beer cans, predicts Robert C. Stolk, vice president in charge of Canco Division sales, American Can Company. While as a group, fruit and vegetable cans still dominate the can-making picture, beer cans now lead individual products.

Shot in the arm

That uniquely American invention — the cocktail — and the just plain old highball have proven a strong shot in the arm for the hors d'oeuvre business. This year, partly reflecting the sharp increase in home entertainment, sales of these products will hit a new all-time high, according to National Association for the Specialty Food Trade.

For more information on product at right, circle 5264 see information request blank opposite last page.

Valley Fresh Sweet Dairy Whey—high quality dairy ingredient

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here are "pluses" lemon juice gives

Improved flavor or palatability • Preserved color, texture and flavor during and after processing • Reduced pH and required autoclave temperature of low-acid foods • Reduced bacteria count in non-sterilized foods, fresh or frozen • Retarded enzymatic deterioration in fresh foods • Retarded development of trimethylamine and other off-flavor alkamines in fish and shrimp • Enhanced flavor in low-sodium dietetic products • Increased and protected ascorbic acid potency; its penetration and absorption helped.

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5265 on Reader Service Slip.